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FARM INCOME DIFFERENTIALS IN THE SOUTHERN PIEDMONT, 1860-1940*

ANTHONY M. TÄNG

Vanderbilt University

I. INTRODUCTION

It is a well-known fact that agricultural incomes differ greatly between nations as well as between communities of the same nation. Furthermore, observed community (per-capita) farm incomes,¹ far from tending toward equality over time, have pulled increasingly further apart. While some communities on the American scene, notably those of the Southeastern region, have remained virtually stationary in average (real) farm incomes, others have surged far ahead. Just how far have different farm communities drifted apart in terms of average income? Here, Professor Schultz's striking example of Grundy County, Iowa and Breathitt County, Kentucky is highly instructive. In 1945, in terms of the Hagood farm-operator family level-of-living index, the Kentucky county registered an index of only five as compared with 196 for the Iowa county.² This difference, percentage-wise, is fully as great as that between China and the United States in 1947, in terms of Colin Clark's data on levels of real national product per man-hour. This is, indeed, "a similarity that should not be dismissed too lightly." Looking back, we find that before 1800 the highest country was only five times above the lowest in terms of Clark's index. This difference between the highest and the lowest countries has since widened to seven times by 1825, 17 times by 1910, 25 times by 1930, 33 times by 1940 and 39 times by 1947.³

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¹ By farm income, unless otherwise indicated, we mean total gross income derived from agriculture. This concept includes all gross income payments from agriculture to factor-owners, in or out of agriculture, but excludes all income payments from non-agricultural sectors to persons engaged in agriculture (e.g., government payments, income from part-time industrial employment).

² Theodore W. Schultz, "Reflections on Poverty within Agriculture," *Journal of Political Economy*, February 1950, LVIII, No. 1, pp. 2-3, n. 2.

³ *Ibid.*, pp. 8-9, n. 14. Although Clark's measure is actually that of labor-productivity in all economic activities, there can be little doubt that its divergent trend portrays as well the trends in agricultural labor productivity and in farm income, particularly in the less developed countries where agriculture dominates the entire national economy.

The above empirical evidence shows that there is a real poverty problem in agricultural areas even in this country and that, if the past trend in community average farm incomes is allowed to continue, community-wide poverty (in a relative sense) will become even more pronounced in the future. Insofar as poverty is socially undesirable and economically indicative of uneconomic resource allocation, its elimination should clearly be the goal of any sound public policy. This at once points to the necessity of identifying the forces that bring about disparities in farm income. There are many theories that have been advanced in the explanation of income disparity in agriculture and its ever-widening trend. It may be well to point out at the outset that these theories will be evaluated from the standpoint of their plausibility in explaining not the short-run differences, but the persistent, increasing differences in community farm income over time. The more popular explanations may be grouped broadly as follows: (1) those which rest on some "original" difference between communities (e.g., community differences in the natural capabilities of the human agent, in the shape of the utility functions, or in the quality of the agricultural land); (2) those which rest on some "dynamic" difference (e.g., differential rate of local industrial-urban development) between communities; and (3) those which rest on the ground that communities have not been uniformly affected by the varying pattern of secular drifts in (farm) commodity prices.

II. INTUITIVE EVALUATION OF THE EXPLANATIONS OF COMMUNITY DIFFERENCES IN FARM INCOME

"Original" differences in the natural capabilities of the human agent and in the utility functions between communities are undoubtedly capable of giving rise to important differences in community (average) farm income even under conditions of perfect factor (and product) markets. However, only within the framework of imperfectly-functioning factor markets, are we likely to find increasing income differences over time.⁴ "Original" differences in land quality (broadly defined) between communities, on the other hand, clearly cannot give rise to unequal factor returns (prices) between communities under perfect markets,⁵ although they *may* bring about differential average community farm income. This follows because, while returns to factors may be equalized by free factor transfers between communities, differences in land quality—which may be looked upon as a source of windfall gain to some communities and as a source of windfall loss to others—⁶would have called forth different input and enter-

⁴ Under conditions of external capital rationing and immobility of factors in agriculture, a high-income community, through its more substantial personal savings and, therefore, capital formation, can raise its capital-labor ratio more rapidly than a low agricultural income community. This will result in increasing income differences between the two communities as the former community finds itself increasingly more able to bridge the gap between the rate of returns to capital and the prevailing interest rates.

⁵ Even the technical rigidity in input combinations, alleged by some economists to be inherent in poor land, would fail to bring about differences in factor returns, for such land can always be abandoned.

⁶ Thus, an irrigation system constructed without cost to a community may be looked upon as a difference in land quality that accrues as a windfall gain to this community upon

prise (output) combinations. The latter, in turn, may well yield different ratios of capital to labor—hence, differential per-capita income (sum of the gross returns to all factors)—as long as we assume the same proportion of the population in the agricultural labor force in all communities. However, here again, increasing differences in farm income (and factor returns) over time are possible only under imperfectly-functioning factor markets.

It goes without saying that, even under imperfect factor markets, some equilibrating factor movement does take place. Moreover, free (or virtually free) commodity trade between regions also tends to supplement imperfect factor transfers by virtue of its equalizing effect upon factor returns between communities. Thus, the key question is: Given imperfectly-functioning factor markets, is the disequilibrating income effect of these "original" differences upon local agriculture sufficient over time to overcome the equilibrating effect of imperfect factor transfers? To provide an answer to this query, we shall hypothesize that "original" differences in a certain community attribute are not capable of giving rise to sustained, increasing income differences in agriculture. In later sections, our analysis of the long-time farm income trends of the several Piedmont counties will throw some light on this hypothesis.

The proposition that divergent average farm income between communities stems from the uneven pattern of secular drifts in farm commodity prices need not detain us long. In this connection, the failure of the present price support program to solve the income problem of America's low-income farm communities, despite high support prices, probably constitutes an adequate rejection of this argument. Certainly, in the long run, declining prices are not inconsistent with sustained high incomes.⁷

Now we come to the "dynamic" differences in community attributes or characteristics as possible explanations of divergent average farm income between communities. At this juncture, it suffices to say that, in view of the equilibrating factor movement which (though imperfect) may be substantial over a long period of time, intuition alone would indicate that community differences of this type probably offer the most likely explanation of long-time divergence in agricultural incomes. As we shall see shortly, the Piedmont study area gives us a rather unique opportunity to compare empirically the effects of community differences, both "original" and "dynamic," upon the incomes of the area's agriculture over a period of some eight decades. It is hoped that findings in this connection will be helpful to a better understanding of the nature of increasing disparities in community farm income.

its completion. Likewise, differences in the natural quality of land may be considered as a windfall gain to those communities with "good" land and as a windfall loss to those with "poor" land at the time of the settlement of these communities. Judging by the manner in which this country was settled, e.g., the settlement under the Homestead Act and various state lottery acts, wherein little or no consideration for quality was given in parceling out the land, windfall gains of this type were apparently common occurrences at that time.

⁷ For a more eloquent rebuttal of the argument, see Schultz, *op. cit.*, p. 6. At any rate, the homogeneity of the type of farming in the Piedmont after the Civil War makes this proposition inapplicable in this analysis, regardless of its validity.

III. EQUILIBRATING MOVEMENT IN FARM INCOMES, 1860-1900

Before the Civil War, the Southern Piedmont⁸ was characterized by a highly uneven development of cotton culture.⁹ As late as 1860, five of the area counties reported a cotton production of less than 20 bales per 1,000 acres of improved farmland, while two had a relative production of 128 bales and more. From the numerous historical works on the Cotton South, it is clear that cotton was a highly profitable crop, particularly during the early decades of the 19th century, in relation to other cash crops (e.g., tobacco). Thus, cotton was a source of windfall gain to those counties endowed with an environment favorable for cotton production. This statement is fully consistent with the high correlation between farm capital (excluding slaves) per worker (including slaves) and cotton production per 1,000 acres of improved farmland in 1850 and 1860.¹⁰ This high correlation is undoubtedly a reflection of the positive income effect of the cotton counties' relatively higher past farm income upon their investment in agriculture.

The distribution of farm capital among the study area counties was highly dispersed in 1860. In that year, the value of farm capital per worker ranged from \$348 in Banks County to \$1,109 in Chester County. Such then was the nature of the "original" difference between the cotton and non-cotton counties just before the outbreak of the Civil War. Under conditions of external capital rationing and immobility of factors of production, this "original" difference in farm capital per worker observed in 1860 is just as capable of giving rise to sustained, indeed increasing, differences in farm income over time as an "original" difference in, say, land quality. However, as was indicated previously, some equilibrating factor movement must be expected to take place even under highly imperfect factor markets. We now turn our attention to the post-Civil War period with the purpose of determining whether the specified "original" difference indeed led to increasing or, at least, sustained farm income differentials in the Piedmont over a long period of time, in spite of the equilibrating factor movement.

Before we undertake a more intensive investigation in a later section, let us

⁸ The case study area under investigation in this paper consists of 21 contiguous counties in the South Carolina and Georgia Piedmont. These selected counties, which lie directly between Atlanta, Georgia and Charlotte, North Carolina, are as follows: Anderson, Cherokee, Chester, Greenville, Lancaster, Oconee, Pickens, Spartanburg, Union, and York (South Carolina); and Banks, Barrow, Elbert, Franklin, Gwinnett, Hall, Hart, Jackson, Madison, Stephens, and Walton (Georgia).

⁹ Such uneven spread stemmed in part from the fact that the growing season was too short in the mountain-fringe sections of the area—a short-coming later remedied after the Civil War following the introduction of commercial fertilizers which materially hastened the growth of cotton—and in part from the fact that some of the area counties were part of the Cherokee Indian territory as late as 1818. By the time these counties were thrown open to mass settlement, more suitable Western cotton land was already available to cotton planters, so that these counties were largely by-passed during the cotton rush. As a result, little cotton was grown in these counties and few slaves were brought in during the antebellum era.

¹⁰ The rank correlation coefficient (Spearman's ρ) is +.92 in 1850 and +.72 in 1860.

indicate at this point that, as a measure of relative dispersion, the coefficient of variation shows that initial farm income differentials largely disappeared during the post-bellum period, so that by 1900 all the area counties had reached virtual long-run equilibrium with respect to one another. However, even as late as 1880,¹¹ in terms of gross farm income per worker, the coefficient of variation was still 0.21, as compared with only 0.09 in 1900. Perhaps a more meaningful way of describing the decreases in the dispersion of the area counties' per-worker farm income is to say that, in 1880, 11 counties deviated from the area average by 15 per cent or more and 6 counties by 25 per cent or more, but that by 1900 only 3 counties differed from the area average by 15 per cent or more and none by more than 19 per cent (Appendix Table I).

The convergent farm income trend among the area counties during 1860-1900 is quite consistent with the failure of the traditional cotton counties to maintain their superiority in the capital-labor ratio during that period. In both 1850 and 1860, we may recall that cotton production per 1,000 acres of improved farmland was very closely associated with the value of farm capital per worker. By 1900, however, the traditional cotton counties had completely lost their lead in this respect. This is clear from the non-correlation ($\rho = +0.063$) between cotton production per 1,000 acres of improved farmland, 1860, and the value of farm capital per worker, 1900. This failure of the traditional cotton counties to increase or even maintain their lead in per-worker farm capital and the disappearance of the prewar income differentials are undoubtedly the result of the workings of the equilibrating forces.¹²

IV. DISEQUILIBRATING MOVEMENT IN FARM INCOMES, 1900-1940

Beginning with 1900, local industrial development became substantial in the study area. For the area as a whole, total value added by manufacture increased from only \$22 per capita in 1900 to \$129 per capita in 1940. This represents a relative increase of 486 per cent, as compared with an increase (from \$75 to \$188) of 151 per cent for the nation as a whole. However, not all counties in the area have shared in this growth. As late as 1940, two of the area counties reported no manufacturing; two showed a per-capita value added of less than \$10; and the remaining 17 counties ranged from \$27 to \$199 (Appendix Table I). This divergence in rates of industrial development was the principal "dynamic"

¹¹ Although it is desirable to compare the income statistics of 1860 against those of later years, gross farm income data (value of farm products sold, traded, or consumed on farms) were not made available by the Bureau of the Census until 1870. However, even the data for the latter year are not suitable, because by the Bureau's own admission they were practically worthless for the Southern states.

¹² Although the leveling forces of the Civil War contributed to the disappearance of the prewar differences, they cannot completely explain it, since much of the equilibrating movement took place after 1880. In fact, the relationship between relative cotton production, 1860, and value of farm capital per worker, 1880, was still significant ($\rho = +0.36$, which is significant at the conventional five per cent level). See E. G. Olds' table on critical values of ρ , "The 5% Significance Levels for Sums of Squares of Rank Differences and A Correction," *Annals of Mathematical Statistics*, 1949, V. 20, pp. 117-118.

factor differentiating among the counties of our study area after 1900. It is to the impact of this "dynamic" factor upon local agricultural income that we shall now turn our attention.

Coincidental with this remarkable, but highly uneven, industrial development—which may be termed industrial-urban development since urbanization is generally a development secondary to industrialization—there was, during 1900–1940, a noticeably increasing trend in per-worker income differentials within the agriculture of the study area. In 1900, in terms of per-worker gross farm income, the coefficient of variation was only 0.09. By 1940, it has risen to 0.17 (Appendix Table I). The number of counties that deviated from the mean by 15 per cent or more was only three in 1900, and none had a deviation of more than 19 per cent. In 1940, however, eight counties had deviations of 15 per cent or more, with one county showing a deviation of as much as 48 per cent. These measures of relative dispersion indicate clearly that, from a state of relative equilibrium in 1900, the area counties had, by 1940, become widely different in terms of their per-worker farm income.¹³

Finally, in order to determine whether the 1940 differences in farm income were attributable to the different stages of industrial-urban development in which the area counties found themselves, we correlate per-worker gross farm income and value added by manufacture per capita for 1940. The correlation is found to be positive and substantial ($\rho = +0.66$, $r = +0.54$). A significance test (the t test is used to allow for the relative smallness of our sample) shows that the probability of the correlation coefficient ($r = +0.54$) for our sample study area being explained by chance is only about 15 in 1,000.¹⁴ Consequently, we conclude that the coefficient is significant.

From the cursory investigation thus far made, it appears that an "original" difference is not likely to be a sufficient explanation of persistent, increasing farm income differences between communities over a long period of time and that a likely sufficient explanation probably lies in some community difference that is sufficiently dynamic over time to outstrip the equilibrating effect of the factor movements, imperfect as they may be. Our findings also indicate that, in the Upper Southern Piedmont study area, this dynamic difference was found in the highly uneven local industrial-urban development.

V. COMPARATIVE FARM INCOME TREND OF THE DEVELOPED AND UNDERDEVELOPED COUNTIES, 1860–1940

In order to save time and labor in the more intensive analysis that is to follow, we divide the area counties into three groups while retaining only the two extreme groups. The grouping is made on the basis of the counties' value added by manufacture per capita in 1940. The group of six top-ranking counties in this

¹³ See Appendix Table 1, Cols. 2 and 3 and nn. b and d.

¹⁴ The computed regression equation, $Y = 312.06 + 0.5037X$ shows that for each increase (or decrease) of \$1 in value added per capita (X), the corresponding increase (or decrease) in farm income per worker (Y) is about \$0.50. Computed from data in Appendix Table 1 (Cols. 4 and 6).

respect (York, Greenville, Spartanburg, Barrow, Lancaster, and Anderson) will be called the developed group. The six lowest-ranking counties (Banks, Madison, Hart, Franklin, Gwinnett, and Jackson) will make up the underdeveloped group (Appendix Table I). By a happy coincidence, this grouping is also meaningful with respect to the cotton and non-cotton dichotomy that prevailed before the Civil War. In other words, the developed counties were among the cotton counties in 1860 and the underdeveloped counties among the non-cotton counties. Thus, an analysis of the comparative group behavior before and after 1900 will again enable us to test the basic hypotheses relative to the long-time, income-differentiating potential of an "original" difference vis-a-vis that of a "dynamic" difference.

The short-cut statistical procedure used in this section has been adopted from Frank Wilcoxon.¹⁵ According to this method, the 12 counties in our two groups are ranked from 1 to 12 in descending order of the observed values in question. Group rank sums are then obtained and the smaller sum noted and referred to the probability table provided by Wilcoxon (*ibid.*, p. 13). With $N = 6$ —there are six counties in each of our two groups—the table shows a probability of chance occurrence (P) of 0.05 for a (smaller) rank total of 27, 0.02 for a total of 24, and 0.01 for a total of 23. $P = 0.05$ will be chosen as our point of demarcation between significance and non-significance in group differences. In other words, if the smaller rank total is greater than 27, the two groups are considered not significantly different from each other.

As Table I indicates, the developed counties (i.e., the cotton counties),¹⁶ with a rank sum of 25, showed significantly higher gross farm income per worker than the underdeveloped group (the non-cotton counties) in 1860. By 1880, the rank sum of the developed group had risen to 34 and, by 1900, to 39. The latter rank sum shows that the two groups were completely equal in that year with respect to per-worker farm income. After the latter year, the two groups again began to move apart with the developed group more than recovering its earlier superior income position. By 1930, its rank sum dropped to 30 and a decade later fell to the lowest possible total of 21. Thus, by 1940, the developed counties realized significantly higher per-worker farm income than the underdeveloped counties.¹⁷ Insofar as the counties are classified on the basis of a measure of the degree of their industrial-urban development in 1940, this significant group difference in that year leads to the inference that there was a significant positive relationship between local industrial-urban development and the

¹⁵ *Some Rapid Approximate Statistical Procedures*, rev. ed. (New York: American Cyanamid Company, 1949), pp. 4-5.

¹⁶ Cotton production per 1,000 acres of improved farmland averaged 54 bales in the developed group in 1860, as compared with only 31 in the under-developed group.

¹⁷ Although the differences are in terms of gross farm income, the shift, in 1940, from a gross to a net basis does not decrease the degree of significance of the group difference in per-worker farm income, nor does a shift from gross income to net labor returns in 1940—the only year for which reliable estimates of both can be made, because of the limitations of the census statistics on farm expenditures in the other years. For relevant data see Appendix Table 2.

TABLE I

Gross Farm Income Per Worker, Relatives (21-County Average = 100) and Rank Orders, Developed and Underdeveloped Counties, 1860-1940^a

County	Gross Farm Income Per Worker, ^b Relatives (Study Area Average = 100) ^c									
	1860 ^b		1880		1900		1930		1940	
Developed:										
York.....	116%	1	118%	2	103%	5	95%	8	103%	6
Greenville.....	106	3	89	11	98	9	108	5	105	5
Spartanburg.....	96	4	96	8	100	8	124	2	126	1
Barrow.....	66	10	104	7	96	11	135	1	110	4
Lancaster.....	115	2	127	1	104	4	82	11	113	3
Anderson.....	95	5	110	5	112	2	110	3	121	2
Averages.....	99%	25	107%	34	102%	39	109%	30	113%	21
Underdeveloped:										
Jackson.....	80%	7½	110%	5	113%	1	109%	4	92%	8
Gwinnett.....	57	11	111	3	105	3	100	6	85	11
Franklin.....	71	9	90	10	93	12	88	10	91	9
Hart.....	80	7½	92	9	102	6	96	7	98	7
Madison.....	92	6	110	5	97	10	91	9	88	10
Banks.....	44	12	80	12	101	7	78	12	80	12
Averages.....	71%	53	99%	44	102%	39	94%	48	89%	57
Level of significance of differences.....	P = .03		Not sign.		Not sign.		Not sign.		P < .01	

^a Data computed partly from Appendix Table I (Cols. 1, 2, and 4) and partly from *United States Census, 1860 and 1930, Population and Agriculture*.

^b For definitions of farm worker, see Appendix Table I, nn. b and c.

^c The 21-county averages are \$793 for 1860, \$176 for 1880, \$216 for 1900, \$541 for 1930, and \$359 for 1940.

^d Actually value of farm capital per worker. Farm income statistics (i.e., value of farm products sold, traded, or consumed on farms) were not made available by the Bureau of the Census until after the Civil War. Although the substitution of capital for income may appear questionable, capital in some way is actually a superior measure of the true relative income position, it may be argued, than observed income for any given year, because of the considerable variability of a random nature inherent in the latter. If farm capital were used instead in the entire series, we would have gotten the same general convergent and divergent group movements before and after 1900.

level of income and labor productivity in local agriculture. This, we may recall, is the same conclusion reached earlier under the orthodox correlation technique.

Thus, once again, we have evidence that community farm income differences, though substantial, tend to disappear over time, when brought about by a certain "original" community difference. In the present case, this "original" difference lies in the unequal community ratio of capital to labor, resulting from the uneven distribution of cotton culture (a source of windfall gain) before the Civil War and its positive income effect upon agricultural investment. On the

other hand, available empirical evidence indicates that farm income differentials tend to become more exaggerated over time, when brought about by a certain "dynamic" community difference. In the study area, such a "dynamic" difference was found in the rapid, uneven industrial growth among the various area counties since 1900. It appears plausible to hold then that persistent, increasing community farm income differences, such as those observed in the Southern Piedmont since 1900, are likely to be explainable only in terms of community differences whose disequilibrating income effect upon local agriculture continuously outstrips the equilibrating effect of factor transfers between areas.

VI. THE ROLE OF LOCAL FACTOR MARKETS

In the long run and under a dynamic setting, there can be no doubt that a community's ultimate relative income position depends not so much on its current relative income position as on its ability to make the necessary adjustments in response to changing economic and technological conditions.¹⁸ But the ability of adapting a community's agriculture to changing conditions is dependent upon the efficiency of its local factor markets. From this it follows that further light can be thrown on the strikingly different group income behavior before and after 1900 by examining the extent to which the functioning of the local factor markets has been influenced in the study area counties by the cotton-induced "original" difference and by the uneven industrial-urban development. While a thorough investigation is beyond the scope of this paper, it is, nonetheless, possible to make several significant observations in this connection.

Between 1900 and 1940, important equilibrating population movements did take place within the study area. During that time, average relative net migration per decade¹⁹ amounted to only -3.3 per cent in the developed group of counties, as compared with -15.7 per cent in the underdeveloped group. Thus, net outmigration from the low-income, underdeveloped counties had in effect been substantially higher. This group difference in the comparative migration pattern is statistically highly significant.²⁰ Yet, in spite of this difference, the greater alternative employment opportunities offered the developed counties' farmers by rapid local industrial-urban development had been more than sufficient to offset the consequence of the migration pattern upon the farm labor

¹⁸ Thus, a community endowed with good land or blessed with some other form of windfall gain will ultimately see its advantage dissipated if its local factor markets or its access to the national factor markets remains relatively unsatisfactory. On the other hand, a community endowed with poor land or handicapped by some other form of windfall loss will eventually surge ahead in incomes if it has relatively satisfactory local factor markets or access to the national markets. One should not be surprised then to find that the Mississippi Delta, with one of the world's richest soils, is a low-income farm area; while New England, with its poor, rocky soil, is a high-income farm area.

¹⁹ By relative net migration we mean the net number of migrants during a period divided by the original enumerated population at the beginning of the period. If the number of out-migrants exceeds that of immigrants, the resulting percentage is given a minus sign, indicating net outmigration. If the reverse is true, a plus sign is used to denote net immigration.

²⁰ All data touched upon in this section are presented in Appendix Table II.

force of these counties. Thus, during 1900-1940, the number of farm workers actually declined absolutely in the developed counties, while it increased in the underdeveloped counties. In the meantime, relatively more farm people were in the position to combine family farm enterprises with nonfarm employment in the developed counties. In 1940, nearly twice as many farm operators, relative to the total number, worked 100 days or more off-farm in the developed counties as in the underdeveloped counties. The same was true of all rural-farm residents. In the same year, the percentage of the employed rural-farm residents who were engaged in non-agricultural occupations was substantially and significantly higher in the developed counties. We submit that the presence of more abundant local employment alternatives in the latter counties adds to the efficiency of their local labor market. Under a long-run setting, characterized by rapidly rising incomes in the non-farm sector and a relatively low income elasticity of demand for agricultural products, the solution of the resource and income problems of the American agriculture lies in increased labor productivity without at the same time increasing total production *proportionately*. This means continued reduction in the total farm labor force, accompanied by improved agricultural production techniques, particularly mechanization. It is within this context that we look upon the developed counties' labor market as being more efficient.

The impact of local industrial-urban development upon the local capital market can be seen from the striking differential growth in per-capita bank deposits in the developed and underdeveloped counties since 1900. In that year, per-capita bank deposits were negligible (less than \$15) in both groups of counties. However, since then, as the industrial-urban development proceeded apace, the difference in per-capita (primary) bank deposits (adjusted for price level changes) between the two groups of counties has grown at an almost constant rate of about \$2 per year.²¹ By 1940, bank deposits averaged \$119 per capita in the developed counties, as compared with only \$36 in the underdeveloped counties. This differential growth was undoubtedly the result of the developed counties' substantial industrial-urban development since 1900, which had given rise not only to increased locally-generated income, farm and nonfarm, but also to a greater influx of outside capital. The consequences of the unequal growth of bank deposits to local agriculture can be seen from the significant differences in (private) farm loans (short- and long-term) per worker and in the rate of capital formation between the two groups of counties. Significantly enough, loans from federally-sponsored lending agencies not only failed to equalize group differences in farm loans but actually served to increase absolutely these differences.²²

²¹ On the basis of Rand McNally's published (December 31) balance sheet data, 1900-50, the trend equation for group differences in per-capita bank deposits is: $Y = 15 + 1.9t$; origin 1900, unit $t = 1$ year. All data deflated by the BLS wholesale price index (1926 = 100).

²² This was true of both PCA and FLB loans—the two most important sources of short- and long-term farm credit in the study area, outside of private, profit-making lending institutions. This is probably a reflection of the strict bankability standard, borrowed by the cooperative lenders from the private agencies. For PCA and FLB loan data see Appendix Table 2.

Thus, while, with respect to all categories of farm capital, the value per farm worker did not differ significantly in 1900 between the two groups; the group differences had become highly significant (at better than the 0.01 level) by 1940.²³ At the same time, the developed counties also enjoyed lower interest rates on their farm loans and a more competitive source of supply.

Insofar as the study area counties' type of farming had been rather homogeneous since the Civil War, the observed differences in capital-labor input combination between the two groups of counties cannot be said to be the result of county differences in their production functions. Instead, the above differences reflect fundamental group differences in the relative prices of capital and labor, the extent of external capital rationing, and the existing farm organization. This argument is quite consistent with the fact that farmers of the developed counties enjoyed significantly higher net returns to labor and management per worker in 1940 than those of the underdeveloped counties.

Thus, it appears that the degree of local industrial-urban development was positively associated with the relative efficiency of the local factor markets.²⁴ This finding is in line with Schultz's "impact theory." The difference in market efficiency between the developed and underdeveloped counties is, in the last analysis, the consequence of an imperfect diffusion of the available capital resources and alternative nonfarm employment opportunities among the various counties. In view of the substantial equilibrating factor movement during 1900-1940, this in turn means that the rate of such equilibrating movement, though remarkable, was insufficient to prevail against the higher rate of capital accretion and the greater increases in alternative nonfarm employment opportunities in the developed counties.

A contrary conclusion with respect to the period before 1900 can be easily reached on the basis of the following observation: During 1860-1900, the differential migration pattern for the developed counties (ante-bellum cotton counties) and the underdeveloped counties (ante-bellum non-cotton counties) was much less distinct than that after 1900. The average rate of net outmigration per decade was 8.4 per cent for the developed group and 12.9 per cent for the underdeveloped,²⁵ or a difference of only 3.5 per cent per decade between the two

²³ For total values of all farm capital per worker, see Appendix Table II.

²⁴ This positive relationship may be extended to include local product markets, defined to comprise the markets for the assembling and disposal of farm products, the distribution of agricultural inputs, and the distribution of goods and services consumed by farm families. For relevant empirical evidence in this connection, see Anthony M. Tang, *An Analysis of Southern Economic Development with Particular Reference to Agriculture: Upper Southern Piedmont*, unpublished Ph.D. dissertation, Vanderbilt University, 1955, Ch. IV.

²⁵ Because of the paucity of vital statistics before 1900, the average rate is arrived at on the basis of the actual estimates for 1850-60. However, in view of the convergent income trend during 1860-1900, it is reasonable to assume that decreasing differences in group migration pattern were more likely than increasing differences throughout that period. Thus, it is probable that the group difference depicted by the migration estimates of 1850-60 overstates rather than understates the true magnitude of the group differences during 1860-1900.

On the other hand, the average rate for the period 1900-40 is based upon the actual migration estimates for all decades.

groups. This is to be compared with a comparable difference of 12.4 per cent per decade during 1900-40. Yet, in spite of the relatively negligible equilibrating factor movement, the period before 1900 was noted for its equilibrating income trend among the area counties. Underlying this convergent income movement was the decreasing group difference in the value of farm capital per worker. The fact that the area counties were becoming more alike during 1860-1900 is also evident from a number of other socio-economic indexes listed in Appendix Table II.²⁶

VII. SUMMARY AND CONCLUSIONS

Intuitive arguments and available empirical evidence with respect to the Southern Piedmont study area indicate that "original" differences in certain community attributes do not appear to qualify as sufficient explanations of persistent, *increasing* differences in average community farm income over time, even under conditions of imperfect factor markets. This is not saying that "original" differences are irrelevant to explaining short-run income differences. On the contrary, windfall gains (and losses) in general are quite capable of giving rise to important, short-run income disparities. Certain "original" community differences in human attributes (e.g., natural capabilities and preference patterns with respect to income and leisure) are, moreover, sufficient to lead to sustained, though not increasing, income differentials even under perfect markets. However, as Schultz put it, "it may be held that, whereas there are now poor and rich communities in agriculture, they are still essentially more alike than they are unlike one another, in the distribution of natural human endowments."²⁷ Also, community preference patterns are often mistaken for the cause of observed income disparities, when they are really one of the symptoms. For instance, it is not uncommon for one to hear the argument that Southern farmers are poor because they fish and hunt as much as they do. It is undoubtedly more plausible to hold that Southern farmers fish and hunt as much as they do because they have little else productive to do on their farms. This need not mean that the application of their labor has reached the point where its marginal productivity is equal to zero. But it does mean that if labor productivity can be raised sufficiently in the South by a thoroughgoing farm reorganization, Southern farmers may well do as little fishing and hunting as their Northern counterparts.

Certainly, the long-run relative income position of an agricultural community depends not so much on its current relative position as on its relative ability to adapt its agriculture to changes in demand and technology. Thus, a sufficient explanation of persistent, increasing income differences must lie, it would appear, in those community differences that are sufficiently dynamic to meet equilibrating factor transfers between communities and still leave the high-income communities with relatively more efficient local factor markets. Such a community difference was found in the rapid, but highly uneven, industrial-urban development of the Piedmont area since 1900.

²⁶ Group convergences can be inferred from the movement of group rank sums toward 39, the sum that indicates complete equality among groups.

²⁷ Schultz, *op. cit.*, p. 4.

APPENDIX TABLE I

Farm Income Per Worker, 1880-1940, and Value Added by Manufacture Per Capita, 1900-40, Southern Piedmont^a

County	Gross Farm Income Per Worker ^b			Farm Income Per Worker Adj. for Non- farm Work, 1940 ^c	Value Added by Manufacture Per Capita	
	1880	1900	1940		1900	1940
South Carolina						
Anderson.....	\$194	\$242	\$405	\$434	\$31	\$132
Cherokee.....	200	233	342	390	36	119
Chester.....	220	221	354	382	13	120
Greenville.....	156	212	317	378	32	183
Lancaster.....	223	225	333	407	8	139
Oconee.....	102	175	306	342	16	57
Pickens.....	137	221	316	365	10	83
Spartanburg.....	169	217	388	453	46	181
Union.....	203	236	282	311	37	112
York.....	208	223	316	372	21	199
Georgia						
Banks.....	141	219	274	286	4	0
Barrow.....	183	208	382	395	10	158
Elbert.....	202	199	275	290	10	87
Franklin.....	159	200	323	328	4	9
Gwinnett.....	195	226	279	306	13	27
Hall.....	124	179	310	357	15	124
Hart.....	162	220	364	351	7	8
Jackson.....	193	243	327	331	7	55
Madison.....	193	210	316	318	3	0
Stephens.....	106	174	213	247	13	71
Walton.....	227	245	488	487	15	75
Weighted averages..	\$181	\$219	\$339	\$377	\$22	\$129
Unweighted averages.	176 ^d	216 ^d	329 ^d	359	17	92

^a Data computed from *United States Census*, 1880-1940. For detailed source notations and other information, see corresponding tables in my unpublished dissertation (*op. cit.*). All data adjusted to allow for changes in county boundaries.

^b The farm labor force, in general, was derived with the view of approximating the rural-farm male population 15 and over. For the years before 1900, all rural males 15 and over were included in the labor force for want of better alternatives. For 1900, it was possible to approximate the rural-farm definitions by subtraction of the residents in incorporated places and unincorporated textile mill villages. For more recent years (1930-50), census counts of the rural-farm male population by age groups are available. Despite the apparent non-comparability of our definitions, it is unlikely that the number of farm workers so estimated will seriously distort the area counties' relative income position from one year to another, since there can be little doubt that the overwhelming majority of the rural population was on farms before 1900.

^c For 1940, however, because of the importance of part-time and residential farming in recent years, particularly in the more industrialized counties, even the rural-farm definition is no longer adequate. Thus, the crude 1940 farm labor force based upon the rural-farm population is further refined by allowing for nonfarm work done by farm residents. For details on the method of estimation and sources of data, see my unpublished dissertation (*ibid.*, Chapter III, Table 4, fn. d).

^d The coefficient of variation is 0.21, 0.09, and 0.17 respectively for 1880, 1900, and 1940.

APPENDIX TABLE II
 Selected Indexes, Group Averages and Rank Sums,^a Developed and
 Underdeveloped Counties, Southern Piedmont^b

Index	Developed Group		Underdeveloped Group	
	Averages	Rank sums	Averages	Rank sums
Part A, 1900-40				
1. Net farm income per worker, 1940.....	\$295	21	\$235	57
2. Net returns to labor and management per worker, 1940.....	\$254	21	\$197	57
3. Average relative net migration per decade, 1900-40..	-3.3%	21	-15.7%	57
4. Relative change in farm labor force, 1900-40.....	-3.2%	47	+8.5%	31
5. % farm-operators who worked 100 or more days off-farm, 1940.....	13.1%	25	7.1%	53
6. % employed rural-farm residents in nonfarm occupations, 1940.....	26.9%	22	15.9%	56
7. Bank deposits per capita, 1900.....	\$15	24	\$4	54
Bank deposits per capita, 1940.....	\$119	21	\$36	57
8. Short-term farm loans from banks per farm worker, 1950.....	\$73	21	\$27	57
9. Long-term farm loans from banks per worker, 1950..	\$48	27	\$24	51
10. Increases in farm capital per worker, 1900-40.....	\$1,068	21	\$615	57
11. PCA loans per worker, 1940.....	\$17	36	\$13	42
12. FLB loans per worker, 1940.....	\$133	27	\$91	51
13. Farm capital per worker, 1900.....	\$633	32	\$523	46
Farm capital per worker, 1940.....	\$1,701	21	\$1,138	57
Part B, 1860-1900				
1. Farm capital per worker, 1860.....	\$786	25	\$559	53
Farm capital per worker, 1900.....	\$633	32	\$523	46
2. Average farm size, 1860 (Improved Land).....	105	29	83	49
Average farm size, 1900 (Improved Land).....	38	37	37	41
3. Rate of tenancy, 1880.....	49%	27	38%	51
Rate of tenancy, 1900.....	68%	35	65%	43
4. Relative net migration, 1850-60.....	-9.4%	30	-12.9%	48
5. % male population 21 and over, 1850.....	40.2%	23	38.5%	55
% male population 21 and over, 1900.....	42.1%	39	42.3%	39

^a The level of significance of group differences may be readily inferred from the extent the group rank sums deviate from 39. The latter sum marks the point of complete equality between groups. If the smaller group rank sum (which indicates higher group averages) is 27 or less, the two groups are significantly different from each other at the conventional 95 per cent confidence limit.

^b For detailed information on sources and explanations pertaining to the above data see my unpublished dissertation, *op. cit.*

MONEY INCOME DISTRIBUTION: SOUTH VS. NON-SOUTH¹

THOMAS R. ATKINSON

Federal Reserve Bank of Atlanta

Differences in the degree of equality of income distribution between South and non-South have received some recognition in the professional literature and in the commonplace observations of those who have an opportunity and inclination to contrast the various sections of the country. Little systematic work, however, has been conducted along this line of inquiry. Because of the importance of the distribution of income to consumption and saving patterns, and to regional economic development, an investigation of income inequality will perhaps be of interest to those with a general interest in the South and in regional economic problems. The data used for this analysis are derived from the 1950 Census, which source provides perhaps the most complete and homogeneous income tabulations for a study of this type. Non-money income or income-in-kind is excluded.²

THEORY AND METHOD

The primitive state of theories of income size distribution is a considerable handicap to any systematic investigation of interregional differences in the size distribution of income. Accordingly, a starting point in the empirical exploration is the simple hypothesis that differences in income size distribution between South and non-South are associated with differences in certain characteristics of the populations of the two areas.³ The limited range of availability of Census

¹ This report was prepared with the assistance of various members of the Research Department of the Federal Reserve Bank of Atlanta. The author wishes to express his appreciation to Geoffrey Moore of the National Bureau of Economic Research for developing his interest in the subject, to Earle L. Rauber and Charles T. Taylor of the Federal Reserve Bank of Atlanta for encouraging the present study and to Miss Margaret Ann Kaufmann who performed the bulk of the computational work.

² The definition of the South used in this paper (with exceptions as noted) includes the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. This definition follows H. W. Odum in his *Southern Regions of the United States* (Chapel Hill, 1936). It differs from the Census definition which includes Delaware, Maryland, the District of Columbia, West Virginia, Oklahoma, and Texas as well as Odum's list of states.

³ Garvy lists six general classifications of factors affecting the size distribution of income as follows:

- a. Basic economic and social determinants Taussig identified as "inborn differences in gifts, and the maintenance of acquired advantages through environment and the inheritance of property."
- b. Effects of cyclical changes in economic activity.
- c. Effects of public policies that change the existing income distribution.
- d. Demographic facts such as the age and sex composition of the population and labor force turnover.

tabulations of income as well as the work involved in computations of measures of income concentration acted to restrict the sets of characteristics analyzed to the following:

Color	Weeks Worked	Occupation
Location	Education	Industry

Analysis of income concentration associated with these sets of characteristics is in the main limited to determining which variables seem important and which seem unimportant in accounting for the differences in income size distribution between regions.

Why are the above listed characteristics relevant to the problem of discovering causes of inequality between South and non-South? First, differences in the average size of income receipts in general tend to be associated with stratifications of the population based on these characteristics. Thus, color differences, differences between occupations and between location of residence, etc. are important in explaining income differences between individuals. Moreover, regional differences do exist in the average incomes received by different strata of the population when the characteristics mentioned above are the bases for stratification, for instance, carpenters receive lower wages in the South than in most other sections of the country. The basic characteristics listed above, therefore, may have an association with average incomes that will assist in explaining differences in the shape of the aggregate distribution of income.

Second, the proportions of the population classified by these general characteristics differ between North and South; i.e., the population of the South generally contains a larger proportion of unskilled workers, nonwhites, or rural inhabitants, etc. than does the non-South. Regional differences in the size distribution of income, therefore, may be at least in part a function of differences in the relative importance of the different sub-groups differing in average income when stratification is based upon the characteristics listed above.

The analysis that follows consists of three parts. First, the spread in average or median incomes is examined for each of the six attributes of color, location, industry, occupation, education and weeks worked for the South and for the non-South. Second, differences in the population make-up of the South and non-South according to these characteristics are examined as they appear to be associated with the greater concentration of income in the South. Finally, differences in the degree of income inequality within population groups which are homogeneous with respect to one or more of the above characteristics are examined. Because analysis of within-group differences in the distribution of income abstracts from differences between average incomes for various population groups and also abstracts from differences in the population mix between

e. Socio-geographic factors such as degree of urbanization and geographic location.

f. The time unit to which the income distribution relates. See George Garvy, "Inequality of Income: Causes and Measurement," *Studies in Income and Wealth*, Volume Fifteen (New York, 1952) p. 39.

regions, the improvement obtained by classifying the population for each of the six characteristics provides an additional measure with which to rank the characteristics according to the degree of association with differences in income inequality between regions.

The coefficients of concentration and Lorenz curves used for this paper were determined from the published 1950 Census tabulations on the basis of several assumptions: (1) the average income of the lowest class (less or \$1-499) was \$250, (2) the average income of each succeeding class except the highest class was the mid-point of the respective class, i.e., \$750, \$1,250, \$1,750, etc. (3) the average income of the \$10,000 and over class was \$18,418 for the South and \$18,610 for the non-South as determined from averages calculated from the tabulations of *Statistics of Income*, 1948, adjusted to reflect the somewhat lower basis of the national averages for families and unrelated individuals as calculated in Appendix Table 2 *Income Distribution in the United States By Size, 1944-1950*, (Department of Commerce, 1953).⁴ In all of the analyses zero income earners were excluded from the calculations.

Most of the analysis has been carried out by comparing coefficients of concentration—the ratio of the area between the Lorenz curve and the 45 degree line, or line of perfect equality, and the total area under the 45 degree line. The greater the concentration of income, the more nearly will the coefficient of concentration approach one. Zero and one are the theoretical limits of the measure.⁵

It will be recognized that limitations of Census data prevent complete comparability between measurements. In analyzing the effect of some characteristics, it was necessary to use civilian labor force rather than the total population. In other cases, some abbreviation in the number of income classes was made in the Census tabulation so that coefficients of concentration are not strictly comparable between different sets of characteristics. Nevertheless, in comparisons between South and non-South, identical units were used so that spurious differences cannot arise from the units of measurement.

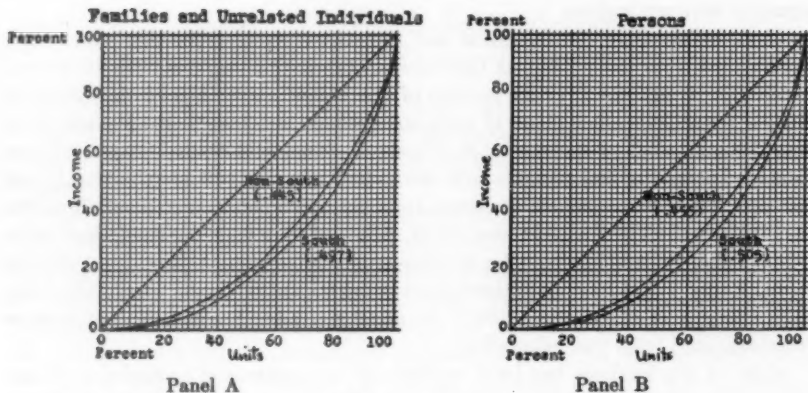
ANALYSIS

Lorenz curves in Chart I show the relative concentration of incomes for the South and non-South, both for families and unrelated individuals combined and for persons. Money income in the South is somewhat more concentrated than in the non-South as the curve for the South in both panels lies farther away from the 45 degree line than does the curve for the non-South, which indicates that a somewhat greater proportion of total income in the South goes to the more opulent income recipients. Panel A, showing the Lorenz curves for families and un-

⁴ This method of obtaining the mean for the open-end class interval at the top of the frequency distribution was not used in computing coefficients for individual cities as shown in Table V. In Table V, the mean of the \$10,000 and over class for each city was estimated by extending a Pareto curve in the manner suggested in *1941 Survey of Spending and Saving in Wartime*, Bureau of Labor Statistics Bulletin, No. 822, pp. 25-27.

⁵ A theoretical description of the measure is given by Horst Mendershausen in *Changes in Income During the Great Depression, Studies in Income and Wealth*, Volume Seven, Appendix C.

CHART I
THE DISTRIBUTION OF MONEY INCOME
South Versus Non-South



Source: 1950 Census of Population, Volume II, General Characteristics.

related individuals, perhaps provides the best conceptual measure of the degree of income concentration when the relevant problem deals with the effect of that concentration on spending, saving, or the welfare status of the population. This is true because the recipient unit employed—families and individuals living alone—approaches closest to that involved in spending-saving decisions. On the other hand, as the earning of income is most often an individual endeavor rather than that of the family as a whole, the causes of income concentration are perhaps better attacked by using the concept of the person as the recipient unit, as in Panel B. In either case, however, the difference between the coefficients of concentration for South and non-South is relatively the same (11.7 per cent for families and unrelated individuals and 11.0 per cent for persons).⁶

Effect of Differences in Average Income Levels

One origin of differences in the size distribution of income in the South vis-à-vis the non-South would arise if in any stratification of the population by a particular set of characteristics (industry classification, for example) it was found that the average income levels of the sub-groups (construction, manufacturing, trade, etc.) for the South deviated more from the average for the total distribution than did the corresponding sub-group averages for the non-South deviate from its total distribution average. In effect, the type of difference in income concentration arising from such a phenomenon would be that arising from the pres-

⁶ The slight discrepancy between these two figures is undoubtedly due to a minor difference in the number of income recipients per family between South and non-South or a difference in the importance of the contribution of so-called secondary recipients between regions.

TABLE I
Variation Between Median Incomes of Sub-Groups: South and Non-South

Set of Characteristics	Coefficients of Variation		Per cent South is of non-South
	Non-South	South	
Color ¹	20.1%	38.8%	193.0
Location ¹	18.3	30.6	167.2
Weeks worked ²	57.1	60.0	105.1
Education ³	30.8	48.0	155.8
Occupation ⁴	39.2	48.3	123.2
Industry ⁵	21.5	32.3	150.2

¹ Persons 14 years old and over with income, *1950 Census of Population, Detailed Characteristics of the Population*, by states, Table 87. For color, two classifications were utilized: white and non-white. For location, three classifications were utilized: urban, rural non-farm, rural farm.

² Persons 14 years old and over with income, *ibid*, Table 91. Only three classes were utilized: did not work in 1949, worked in 1949 (less than 50 weeks), worked 50-52 weeks.

³ Persons 25 years old and over with income, *1950 Census of Population, Special Report: Education*, Table 12. Eight classes of educational level attained were utilized. Definition of South is Census Bureau's rather than Odum's.

⁴ Experienced civilian labor force, persons with income, *1950 Census of Population, Detailed Characteristics of the Population*, by states, Table 78. Major occupational classifications were utilized.

⁵ Experienced civilian labor force, persons with income, *ibid*, Table 86. Major industry classifications were utilized.

ence of different compensation schedules between regions.⁷ To assess the relative importance of the several sets of characteristics such as occupation, industry, etc. in accounting for interregional differences in the size distribution of income, examination is made to determine, for example, whether the spread between average incomes of various major occupational classifications is greater than the spread between average incomes of various industry classifications of the population. If the South-non-South differences in spread between average incomes are greater for occupational groupings than for industry groupings, it seems reasonable to believe that the effect on differences in the degree of inequality between South and non-South coming from interregional differences in rates of compensation is more important for the occupation factor than for the industry factor. In this manner, therefore, we attempt to determine the relative importance of the various sets of population characteristics.

The method of measuring the effect of various characteristics on the spread between average incomes is by calculating the coefficient of variation (i.e., the standard deviation divided by the mean) of the median incomes of each subgroup and comparing the relative differences between South and non-South for

⁷ The term "compensation schedule" is used to mean the entire system of average incomes for the medley of economic groups making up the population. Strictly speaking, of course, the term has the most applicability to wage rates or salary levels. Because we are dealing with the total population or labor force instead of merely wage and salary earners, however, the "compensation schedules" refer to total income receipts from any source.

each set of characteristics. (See Table I.) The greatest differences between South and non-South in average compensation rates are found to be associated with the factors of color and location.

This is single variable analysis. Tabulations of Census material only rarely show income tabulated against a second characteristic and cross tabulated against a third characteristic. For this reason it is extremely difficult to determine how much of the importance of one characteristic is a result of other characteristics with which it is associated.

Effect of Differences in Composition of Population

The next task is to consider how differences in the importance of various population components between South and non-South help to explain the greater inequality in the South. While the previous section analyzed the spread in average incomes for sub-groups of the population based on the six characteristics, attention in this section focuses not on the average incomes but on the income distributions of the subgroups themselves and the way differences in population "mix" or the relative weights of component groups affect the total distribution. Differences in the distribution of income associated with differing composition of the population are arrived at by computing the percentage improvement in the coefficient of concentration obtained by applying the same weights to the sub-groups for the Southern population as exist in the non-South. Thus, for example, the income distribution for farmers and farm managers in the South has been reweighted to 5.7 per cent of labor force income recipients rather than 14.0 per cent as is actually the case in order to give the same weights as in the non-South to this sub-group. Other occupational groups also are reweighted in order to bring them into conformity with their respective importance in the non-South. In each case, no change was made in the income distributions for the sub-groups which continue to reflect the actual distributions for the South. This reweighting procedure, in effect, results in "standardizing" the population composition for South and non-South for a particular set of characteristics. By comparing the relative reduction of the difference between South and non-South in

TABLE II
Concentration Coefficients Associated with Population Characteristics: Actual and Standardized for Interregional Differences in Importance of Sub-Groups

Set of Characteristics	Coefficients of Concentration			Per cent Reduction of Difference in Coefficients Obtained by Standardization
	Non-South	South—actual	South—standardized	
Color ¹.....	.455	.505	.487	35.0
Location ¹.....	.455	.505	.495	20.0
Weeks worked ².....	.451	.504	.498	11.3
Education ³.....	.432	.495	.478	27.0
Occupation ⁴.....	.395	.456	.434	36.1
Industry ⁵.....	.398	.467	.439	40.6

Source: See Table I.

the coefficients of concentration resulting from the standardization procedure using different sets of characteristics, some judgment of the relative importance of the sets of characteristics in explaining the difference in income distribution should be possible.

Table II shows the change in coefficients of concentration resulting from standardization of the distribution of the South in accordance with the weights of the sub-groups for the non-South for the sets of characteristics analyzed. It should be noted that the coefficients in Table II are not coefficients of variation of median incomes as shown in Table I but are quantitative measures of the Lorenz curves as they actually exist and as they would exist if both South and non-South had the same relative importance of individual population components first for color, second for location, etc. Three factors appear to be of first order of importance by this test—color, occupation, and industry.

Within-Group Difference

Variations in the degree of concentration in the distribution of income between regions can arise not only because of differences in the degree of spread in average incomes or compensation and because of differences in the composition of the population but because of other factors. In the scheme of analysis adopted, the effect of these other factors associated with concentration differences between regions is observed by considering differences in the income concentration of groups which are alike in one or more characteristics. Observation of within-group differences, therefore, serves the twin function of (1) showing how much remains unexplained by the previous analysis and (2) showing which of the characteristics have the greatest value in producing homogeneous income groups in which regional differences in the degree of concentration disappear.⁸ Obviously, the analysis of within-group differences cannot be exhaustive, not only because of limitations of the Census tabulations but also because of the labor involved in computing concentration coefficients for individual sub-groups.

The top section of Table III shows the concentration coefficients for South and non-South for all persons, for color groups, location groups and sex groups. In addition, column 3 shows the per cent the coefficient for the South is of the coefficient for the non-South. Examination of these South-non-South relatives reveals that the difference in income concentration between regions is reduced by the process of splitting the population into groups which are homogeneous in respect to the characteristics. This is true for all groups listed except in the case of males. Examination of the relatives for the sub-groups does not, however, provide a way of determining which characteristic is most useful in classifying the population into homogeneous groups with respect to the distribution of income.

One measure of the relative effectiveness of each major characteristic as a basis for classification into homogeneous income distributions between regions

⁸ See, for example, one view of the South-non-South difference in income distribution as given in Elizabeth E. Hoyt, Margaret G. Reid, Joseph C. McConnell, Janet M. Hooks *American Income and Its Use* (New York, 1954) p. 132.

TABLE III
Income Inequality Within Similar Population Groups, South and Non-South

Characteristics	Coefficients of Concentration		Per cent South is of Non-South (3)	Weighted Relatives of (3) (4)
	South (1)	Non-South (2)		
<i>Single Characteristics</i>				
All persons.....	.505	.455	111.0	
Color				107.4
White.....	.487	.455	107.0	
Nonwhite.....	.441	.398	110.8	
Location				108.0
Urban.....	.487	.441	110.4	
Rural non-farm.....	.478	.464	103.0	
Rural farm.....	.507	.510	99.4	
Sex				113.5
Male.....	.478	.410	116.6	
Female.....	.502	.467	107.5	
<i>Combined Effect of Color, Location & Sex</i>				104.0
Urban				
Male				
White.....	.421	.392	107.4	
Nonwhite.....	.342	.300	114.0	
Female				
White.....	.459	.446	102.9	
Nonwhite.....	.409	.407	100.5	
Rural Non-Farm				
Male				
White.....	.427	.409	104.4	
Nonwhite.....	.376	.406	92.9	
Female				
White.....	.474	.494	96.0	
Nonwhite.....	.384	.466	82.4	
Rural Farm				
Male				
White.....	.485	.478	101.5	
Nonwhite.....	.429	.481	89.2	
Female				
White.....	.498	.533	93.4	
Nonwhite.....	.319	.456	70.0	

Source: See Table I.

may be obtained by multiplying the relatives in column 3 by some realistic system of weights and then computing weighted average relatives as shown in column 4. The system of weights used is the proportion income earners in each sub-group represents of total U. S. income recipients. For example, to determine the importance of color in within-group differences in income distribution between regions, the South-non-South relative of 107.0 for whites was weighted by 90 per cent, the proportion white income recipients make up of total U. S. in-

come recipients, and the nonwhite relative of 110.8 was weighted by 10.0 per cent, the proportion nonwhite income receivers make up of the total. The resulting weighted average relative for color is shown in column 4 as 107.4. By this test, about one-third of the 11 per cent greater inequality in income distribution of persons between regions is removed by considering color groups separately irrespective of income differences between color groups and irrespective of differing proportions of income recipients by color between regions. Moreover, color as the basis of producing homogeneous income distributions between regions is slightly more effective than location and both of these factors are substantially better than the sex characteristic, which factor, in fact, represents no improvement over the difference for the total income receiving populations between regions.

This type of analysis can be carried one step further and the combined influence of color, location and sex upon the income distributions of the South and non-South may be observed. The lower section of Table III shows coefficients of concentration for the two regions for urban, rural non-farm and rural farm segments of the population also divided into color and sex components. If the relatives in column 4 are weighted by the proportion each component represents of total U. S. income earners, a weighted relative is obtained of 104.0. This indicates that about 64 per cent of the difference in inequality between South and non-South is removed by abstracting from differences in income levels between sex, color and location groups and between differences in the proportion each group represents of the total in the two areas and considering the joint effect of color, location and sex on within-group differences in income distribution. About 36 per cent of the difference in income inequality between South and non-South remains unaccounted for by this process. Further analysis of joint effects of the several characteristics was limited by unavailability of Census tabulations with adequate cross-classifications showing, for example, income by occupation, by color, etc.

In analyzing within-group differences systematically, only distributions for males were utilized. This appeared to be justified not only because the male income earners show the greatest degree of within-group differences in income concentration and represent two-thirds of the total income recipients, but also because calculation of concentration coefficients for some of the minor subgroups would have been complicated by possible bimodal distributions arising where both male and female recipients are combined in about equal proportions. For these reasons Table IV shows coefficients of concentration, South-non-South relatives and weighted relatives for each characteristic for males only. It will be seen that location ranks first as the characteristic producing the greatest degree of homogeneity in income distributions between South and non-South while occupation, education and industry followed with about equal rank.

The concentration coefficients and simple relatives for the various male subgroups shown in Table IV are themselves of considerable interest for the light they shed upon the causes of income inequality. Generally, blue collar occupations and heavy industries show the most equal distributions of income but the

TABLE IV

Income Inequality Within Similar Population Groups for Males, South and Non-South

Set of Characteristics and Sub-Groups	Coefficients of Concentration		Per cent South is of Non-South	Weighted Relatives of (3)
	South (1)	Non-South (2)	(3)	(4)
<i>Total:</i> .....	.478	.410	116.6	
<i>Color:</i>				113.5
White .....	.462	.409	113.0	
Nonwhite .....	.406	.343	118.4	
<i>Location:</i>				109.5
Urban .....	.440	.392	112.2	
Rural non-farm .....	.439	.414	106.0	
Rural farm .....	.491	.479	102.5	
<i>Occupations:</i>				111.2
Operatives & kindred workers .....	.316	.258	122.5	
Craftsmen, foremen, etc. ....	.311	.256	121.5	
Laborers except farm & mine .....	.346	.301	115.0	
Service except household .....	.347	.305	113.8	
Clerical, etc. ....	.294	.266	110.5	
Mgts., offs., & proprietors .....	.450	.423	106.4	
Professional, technical, etc. ....	.416	.394	105.6	
Sales workers .....	.416	.405	102.7	
Pvt. household workers .....	.371	.389	95.3	
Farmers, farm managers .....	.458	.481	95.2	
Farm laborers .....	.322	.407	79.1	
<i>Industries:</i>				111.9
Public administration .....	.305	.253	120.6	
Manufacturing .....	.377	.313	120.4	
Transportation, comm., & p. u. ....	.323	.272	118.8	
Personal services .....	.457	.396	115.4	
Mining .....	.350	.309	113.3	
Construction .....	.404	.363	111.3	
Wholesale & retail trade .....	.449	.407	110.3	
Professional & related services .....	.483	.463	104.3	
Finance, ins., & real estate .....	.436	.424	102.8	
Business & repair services .....	.389	.387	100.5	
Entertainment & Rec. Serv. ....	.495	.496	99.8	
Agriculture, forestry, fisheries .....	.490	.496	98.8	
<i>Weeks Worked:</i>				118.0
Worked 50-52 weeks .....	.418	.341	122.6	
Worked less than 50 weeks .....	.473	.426	111.0	
Did not work .....	.541	.549	98.5	
<i>Education Completed:</i>				111.4
None .....	.459	.419	109.5	
Elementary				
1-4 yrs .....	.444	.410	108.3	
5-7 yrs .....	.411	.366	112.3	
8 yrs .....	.398	.351	113.4	
High School				
1-3 yrs .....	.363	.310	117.1	
4 yrs .....	.353	.317	111.4	
College				
1-3 yrs .....	.403	.383	106.5	
4 & over .....	.418	.420	99.5	

Source: See Table I.

TABLE V

Income Concentration and City Size: White Families and Unrelated Individuals For South, All Families and Unrelated Individuals For Non-South, 82 Sampled Cities

City size	Coefficients of Concentration (Medians)	
	South	Non-South
Urban places		
10,000-20,000.....	.430	.413
20,000-40,000.....	.440	.430
40,000-100,000.....	.431	.393
Standard metropolitan areas		
100,000-200,000.....	.428	.406
200,000-400,000.....	.418	.435
400,000-1,000,000.....	.434	.406

Source: Computed from 1950 *Census of Population, Volume II, General Characteristics*.

greatest degree of inter-regional differences. Conversely, the white collar occupations and light industry show the greatest degree of income concentration and the least differences between regions. It is interesting to note, furthermore, that income in agriculture is highly unequally distributed but that differences between South and non-South in the degree of inequality in this industry are slight. Perhaps common technology and practical limitations on farm size imposed by the family farm system as well as similarities in risks of cultivation and scales of soil fertility would make such a finding not unexpected. It is likewise interesting to note that public administration ranks first in the degree of difference in income distribution between South and non-South although the degree of concentration is slight. Undoubtedly inclusion in this category of rural and Negro school teachers in the Southern distribution tends to produce much greater differences in income inequality than would otherwise be expected. Finally, it is noteworthy that the greatest difference in income distributions between regions and the least degree of inequality occurs in the groups with neither the least nor the most education.

There are, of course, many ways to dissect the population of the South and non-South in search of income distributions that will show the same degree of dispersion between the two areas and which will also point the way to the cause in difference in income concentration between regions. One, particularly interesting hypothesis is an extension of the Johnson thesis that average incomes in South and non-South are equal for whites in similar sized cities.⁹ In this hypothesis the difference in income distributions of urban whites between South and non-South would be explained by the fact that more of the Southern population resides in cities of smaller size than is true for the non-South. Because there does appear to be a higher degree of income concentration in smaller-sized cities than in larger cities, it is interesting to inquire into the degree of income concentration for whites in cities of similar size in the South and non-South. Census

⁹ Evidence bearing upon this hypothesis is contradictory. See D. Gale Johnson, "Some Effects of Region, Community Size, Color, and Occupation on Family and Individual Income," *Studies in Income and Wealth*, Volume Fifteen, pp. 49-66 and Comments, pp. 67-74.

tabulations do not show income distributions for whites only for the non-Southern states and it was necessary to assume that non-whites were a relatively insignificant portion of the total income distribution in non-Southern cities. Concentration coefficients were computed for a sample of 41 cities in the South and 41 in the non-South, for urban places from 10,000 to 100,000 population and for metropolitan areas from 100,000 to 1,000,000 population. Concentration coefficients varied greatly even for cities of similar size in the same region but median concentration coefficients for sampled cities in the South were higher than those for sampled cities of the non-South in all but one of the six size groups analyzed. Apparently, therefore, city size is not a major explanation of differences in income inequality between South and non-South for whites.

CONCLUSION

The greater degree of income inequality in the South as contrasted to the non-South has not been found to be associated with any single population characteristic to the exclusion of other characteristics. Instead, differences in the spread in average compensation of various components of the population and differences in the population make-up between regions seem to be identified with several of the characteristics that have been analyzed. In the analysis of how differences in average of median incomes of component groups of the population could contribute to greater differential inequality in the South, color and location ranked above the four other factors by some margin. In the analysis of how differences in the population "mix" could account for greater inequality in the South, industry ranked first. As a basis for classification of the population in order to produce income distributions with about equal degree of concentration between South and non-South, the characteristic of location seemed most successful for males. For the total population, color and location considered separately ranked about equally well as a basis of classification to produce homogeneous income distributions with respect to dispersion in the two areas. Color, location and sex characteristics combined were apparently capable of reducing the interregional difference in income concentration by about two-thirds.

The facts on regional differences in inequality presented in this investigation can be dealt with on two levels in forming a hypothesis of causation. First, would be the hypothesis that the greater income inequality in the South is a product of the social and economic history of the region. In this view a part of the greater income inequality in the South is a holdover from the days when the Southern economy was largely agrarian and to a considerable extent based upon the institution of slavery, both conditions tending to produce great inequality in income distribution. While the industrial development of the region and the freeing of the slaves would be expected to reduce income inequality generally, to the extent that some areas moved ahead rapidly while others were retarded, the process of economic growth in itself might furnish some causes for inequality. As an integral part of such an explanation, the many institutions which retard or accelerate social and economic change and the difference in the working of these institutions in different sections of the country cannot be omitted.

Without meaning to cast doubt upon a historical view of the South's social and economic development as a logical explanation for income inequality in the area, it is nevertheless justifiable to ask whether strictly economic factors alone could also tend to make for greater income inequality in the region as compared to the non-South. Certainly many of the characteristics of underdeveloped areas such as underemployment, heavy reliance upon agriculture, the existence of both modern capital-intensive techniques and methods using a great deal of labor and little capital in a single economy, and large differentials in factor returns in different economic sectors would tend to produce a high degree of inequality in the distribution of income. The view has been advanced by Eckaus that many of the major problems of underdeveloped areas arise because of limitations on the technical substitutability of factors in many modern productive processes, relative fixity of factor endowments in a region, and limits on factor mobility.¹⁰ If such is the case, and it would appear logical, a more unequal income distribution in the South than in the non-South would have occurred even apart from social and historical processes because of differences in factor proportions between areas as well as because of fixity of the technical coefficients of production. To the extent, however, that factor mobility is probably greatly conditioned by social and historical developments at least part of the problem still lies outside the strictly economic sphere.

In conclusion, it is probably useful to mention that to the extent the shortage of capital relative to labor is a cause of income inequality, the condition would tend normally to be self-reducing. In other words, a high degree of income inequality, *ceteris paribus*, would lead to increased saving and capital formation which would, in turn, lead to greater equality of the distribution of incomes. This process, the flow of investment funds into the area, and the gradual removal of barriers to factor mobility would all seem to make for a gradual reduction in the difference between South and non-South in the concentration of income.

¹⁰ R. S. Eckaus, "Factor Proportions in Underdeveloped Areas," *American Economic Review*, September 1955, XLV, pp. 539-565.

COTTON AND THE WORLD ECONOMY*

ROYALL BRANDIS

University of Illinois

The United States Government has been engaged for a quarter of a century in endeavors to improve farm incomes through both acreage controls and price-supports—especially for the major crops. Cotton has, of course, played a large part in these programs. A cynic might even observe that only the tobacco growers have been more successful in obtaining favorable crop legislation.

Two striking changes have occurred in the world picture since the inception of these controls. One is the shift from depression to a period of sustained full employment. The other is the rise of the United States as the dominant nation-state in world affairs. These two changes make imperative a fresh look at American agricultural policy.

The literature of the last twenty-five years on the subject of agricultural policy leaves this reader with two general impressions. First, economists have been unduly concerned with *price-quantity* relationships in their analyses rather than with the effect of agricultural policy on the net income of the farmer. This despite the fact that all of our Principles texts stress the importance of profit maximization in explaining the motivation of businessmen and seldom fail to point out that the farmer is included in the generic term, "businessman."

If, for example, we adjust the export price of cotton (taken as the season average price at New Orleans) for changes in the prices paid by farmers, then the adjusted value of American cotton exports in 1931 without controls turns out to be less than the value of the greatly reduced export trade of 1934 with controls.¹ From the standpoint of physical volume, however, 1931 was one of the best years in the long history of U. S. cotton exporting. And, of course, it cost the American cotton grower far less to produce the five million bales exported in 1934 than to produce the nine million bales exported in 1931.

Despite the experience described above, one recent writer says, "Unless cotton is moved into other countries with the help of a subsidy, cotton growers would lower their income from cotton rather than increase it by production restrictions."²

The second general impression is that in many of the analyses, the value-judgments of the analysers are barely concealed, and I come very close to feeling that many economists take the attitude that, since the farmer was the last to

* The author wishes to express his appreciation to Professor V Lewis Bassie for a critical reading of an earlier draft. Views expressed are, of course, the author's own.

¹ We might have adjusted the actual dollar receipts from cotton exports rather than the price. This would yield the following figures: 1931, \$415,241,000; 1934, \$402,059,000. This procedure would, however, assume that foreign purchasers correctly foresaw changes in the price of cotton during those years.

² W. E. Hendrix, "The Brannan Plan and Farm Adjustment Opportunities in the Cotton South," *Journal of Farm Economics*, August 1949, XXI, p. 493.

fall from the grace of a competitive market, he offers the best possibility for salvation and a return to the true faith.³

One example must suffice. A leading student of the international economic aspects of our agricultural policy says:⁴

If, on the other hand, agriculture should set its sights on national efficiency, comparative advantage, and on competing in the world market, it must, after making the necessary adjustments, pursue an elastic price and supply policy. Success in exports makes all adjustments much more manageable, and gives the farmer a chance to take a good measure of them upon his own shoulders. I have no doubt that in its present excellent shape American agriculture could successfully compete in a free-exchange world as to both quality of product and price.

The curious thing about statements like this one is that the authors never seem to wonder why the farmer should concern himself with national efficiency or comparative advantage when no other entrepreneurial group does so. Nor is it clear why the farmer, unlike the rest of our entrepreneurs, should welcome a chance to take the "necessary adjustments . . . upon his own shoulders" even though they might well involve a substantial reduction in the net income from his business. A similar appeal to cotton textile manufacturers for tariff reduction on textiles would be taken to be *naivité*.

In the field of foreign trade the results of our agricultural programs may appear so obvious that little attempt will be made to discover what is actually occurring. For example, it is almost universally assumed that price-supports and acreage controls on an important export crop like cotton must be self-defeating because foreign producers will simply expand their cotton production and seize our export markets.

What, in fact, is the relation between American cotton production and the acreage⁵ devoted to cotton-growing in other countries? The author had a number of statistical correlations run on this relationship as between the United States and each of the other three major cotton-exporting nations, India (including Pakistan), Egypt, and Brazil. The three periods analysed were the thirty years 1924-1954, the pre-World War II decade, and the years following the War until 1954. The results can be summarized as follows: In none of the three periods in any of the three countries studied was there a significant cor-

³ Two recent exceptions to the above should be noted: J. K. Galbraith, "Economic Preconceptions and the Farm Policy," *American Economic Review*, March 1954, XLIV, pp. 40-52, and a largely neutral view, Calvin B. Hoover, "Fundamental Issues That Must Be Faced in Agricultural Price Programs," *Journal of Farm Economics*, December 1954, XXXVI, pp. 760-771.

⁴ Karl Brandt, "Long Range Prospects for American Agriculture: International Trade," *Journal of Farm Economics*, December 1953, XXXV, p. 773.

⁵ Acreage is, of course, a better measure of foreign reaction than production since production can be greatly influenced in particular seasons by natural causes, e.g., weather or insect infestations. It is true that there is some relationship between price and yield since a higher expected price may induce a greater use of fertilizer and insecticides, but this seems less important in countries like India, Egypt, and Brazil due to the lack of knowledge and of the requisite capital.

relation between cotton production in the United States and acreage devoted to cotton abroad. Even when a lag of one year was introduced to allow time for adjustment, correlations did not become significant. Similar results were obtained when United States cotton stocks were used instead of production with the one exception that Egyptian acreage showed some significant correlation with United States stocks taking the whole period 1924-1954.⁶

The last quarter-century has been a period of world crisis, economic as well as political. In this period the world experienced a depression unequaled in length and severity, a war of six years duration which involved almost all civilized nations, the reconstruction of Western Europe, and the Cold War.

No doubt an economist is much more comfortable studying a "normal" period than this one. His grounding in the essentially static theory of the classical and neo-classical schools becomes a more and more unsure basis for analysis as the period studied becomes less and less regular and consistent in development. But if one believes that we live in what Toynbee has so well called a "time of troubles," then the regularity for which one seeks in economic matters may have become the regularity only of *irregularity*. We cannot keep turning back, either in empirical studies or theoretical formulations, to the surer, more confident world of 1913. Indeed, I have the feeling that the pre-World War I era is receding from the reality of the present on much the same principle as the distant nebulae of our universe—that is, that as the distance increases, the velocity of recession increases.

In 1929 we began a series of significant experiments in the improvement of farm incomes through governmental action. This experiment involved both acreage controls and price supports.⁷ The result was a reduction of production in some years and an artificially high price for the particular agricultural commodity under control. "Artificial" here involves two factors. The reduction of acreage and thus production⁸ would have led in any case to a price in a free market higher than would otherwise have been the case. Secondly, in some years the price-support level was such that even a reduced crop could not be sold and part found its way into government ownership and storage.

Of all the major crops brought under control in 1933, cotton was most dependent upon its foreign markets. With the exception of World War I, cotton exports averaged about two-thirds of cotton production for two decades prior to 1929.

No one would question that reduced production of, and artificially high prices for, American cotton would tend to reduce both the volume of American exports

⁶ The author wishes to express his appreciation of the assistance of the Bureau of Economic and Business Research of the University of Illinois and of Mr. Eugene Hamilton in making these statistical tests.

⁷ An excellent description of the origins of the 1933 program, which was the most significant break with the past, and the details of its operation in cotton in its early stages is found in Henry I. Richards, *Cotton and the AAA*, Washington, 1936.

⁸ Production would not, of course, necessarily fall in a perfect correlation with acreage reduction since yields vary. As a matter of fact, in the case of cotton, yields rose but not sufficiently to prevent total production from declining.

and the share of American exports in the world market to the extent that other cotton-producing nations were able to increase their own production and exports. This is not to say, however, that this furnishes the entire explanation for the reduction in American exports in the decades after 1929. Attributing the loss of foreign markets to agricultural controls was popular in the nineteen-thirties among authorities both within and without the industry.⁹

We have, in the past, however, largely failed to emphasize some of the other factors which played important roles in altering the foreign market position of American cotton after 1929.

By any mode of measurement U. S. cotton exports in the twenty-five year period, 1929-54, were considerably lower than in the decade preceding 1929.

The physical volume of exports in the years, 1929-1933,¹⁰ does not compare unfavorably with the pre-depression years, but increased production reduced significantly the *proportion* of the total crop exported except in the years 1932 and 1933. Furthermore, the United States' share in total world exports had fallen even before the very sharp acreage reductions following 1933. For the period, 1925-1929, U. S. cotton exports averaged about sixty per cent of the world total of exports.¹¹ Only in 1932 and 1933 was this figure equaled or exceeded. As early as 1931, U. S. exports fell below the halfway mark in the world export total though by a narrow margin. During these five years (1929-1933) the quantity of cotton exported annually from the United States varied from slightly less than 6.7 million bales to 8.7 million bales. After 1933 the quantity exported in any year never reached the lower figure given above nor approached any closer than one-half million bales to it.

Because of the reduction in production in the 1933 season and those immediately following, cotton exports remained at a fairly high percentage of production until 1937.

The cotton crop of the 1937 season was the first unrestricted one since 1932 and was the largest ever recorded (18.3 million bales). Exports, however, did not increase significantly and the percentage of production exported, consequently, fell to the very low figure of thirty per cent. The carryover from this crop was so large that in the following year (1938), when exports fell by over two million bales, these exports constituted only fourteen per cent of the total supply of American cotton. 1939 saw a sharp recovery in the physical volume of cotton exports and the percentages (of production and of supply) improved accordingly.

During this second period (1934-1939) these violent fluctuations in U. S. cotton exports were largely matched by similar fluctuations in the world total of

⁹ See, for examples, the testimony of W. L. Clayton in Hearings before the Committee on Agriculture and Forestry, U. S. Senate, 74th Congress, Second Session, *To Investigate the Causes of the Decline of Cotton Prices*, Washington, 1936, pp. 34, 43, 258-262; also, Henry I. Richards, *Cotton and the AAA*, pp. 273-274. For a more careful statement, see the brief discussion in Frederick L. Thompson, *Agricultural Prices*, New York 1936, pp. 455-457.

¹⁰ Years refer to calendar years.

¹¹ Derived from L. B. Bacon and F. C. Schloemer, *World Trade in Agricultural Products*, Rome, 1940, p. 418.

exports. As a consequence the U. S. share of the world's cotton trade remained relatively stable although showing a slowly declining trend.

With the advent of war, American cotton exports fell precipitously as a result of the shortage of ship bottoms, blockade, and the severing of trade relations with enemy nations. During the war years (1940-1944) the average annual export was about one and one-third million bales. The very high war-time rate of domestic cotton consumption coupled with relatively small crops prevented a large cotton surplus from accumulating during the war. The supply of American cotton in the 1944 season was actually slightly *smaller* than in the 1940 season.

After the war U. S. cotton production fell to the lowest level of the entire period although there were no acreage controls in operation and yields were considerably higher than those of the nineteen thirties. Exports of cotton from the United States were very erratic—showing signs of rapid recovery from the war-time low at first, then dropping sharply in 1947 below the war-time peak but recovering strongly in 1948. Exports in this last year were almost exactly equal to those of 1934. These exports comprised almost exactly the same percentage of the supply as they had in 1934. Furthermore, the U. S. share of total world cotton exports was actually higher in 1948 than in 1934. Furthermore, the United States claimed a larger part of the world total of cotton exports in 1948 than in 1934. As a matter of fact, the United States claimed a larger part of the world total of cotton exports in 1948 than in any year since 1933. Even so, U. S. cotton exports were only thirty-six per cent of the world total in 1948.

Since 1948, American cotton exports have fluctuated widely around four million bales and have represented about one-third to two-fifths of the world total of exports.¹²

In summary, the volume of U. S. cotton exports in the last twenty-five years was strikingly less than in the decade preceding 1929. The early years of the period were years of transition in which cotton exports, were considerably higher than those of the years following 1932. Finally, after the vicissitudes of depression and war, U. S. cotton exports emerged in the post-war world in approximately the same relative position as in the middle nineteen-thirties.

Economists have made serious errors with regard to the effect of the U. S. agricultural program for cotton on the foreign markets for that fiber. In an article¹³ published in 1947, for example, the following sentence and footnote appear: "In 1935-36 an actual price-payment program, *designed to permit cotton to move into consumption rather than into storage*, was in operation."* (Italics supplied.)

¹² Statistics in the preceding paragraphs are drawn or derived from U. S. Department of Agriculture, *Agricultural Statistics*, various years, for the pre-War and War periods and from International Cotton Advisory Committee, *Cotton, Quarterly Statistical Bulletin*, for the post-War years.

¹³ D. Gale Johnson, "Reconciling Agricultural and Foreign Trade Policies," *The Journal of Political Economy*, December 1947, LV, pp. 567-571. Also found in American Farm Economic Association, *Readings on Agricultural Policy*, pp. 260-267.

* A loan rate of twelve cents was granted on the 1934 crop of cotton. This increased the American price relative to the world price, and American cotton exports fell off drastically.

While it is true that American exports fell off both relatively and absolutely between 1933 and 1934 and it is also correct to state that "Exports from the 1935 crop were considerably larger [in absolute terms] than from the 1934 crop . . .," it is *not* true that foreign consumption of American cotton increased significantly in 1935 over 1934 in either absolute or relative terms *nor* that American cotton exports increased significantly in 1935 over 1934 in relative terms, *nor* that the American price increased significantly *relative* to the world price in 1934 over 1933.¹⁴

It is presumptuous to suggest the reason for such an error, but I believe there is an important lesson here. Economists of the highest competence may blind themselves to or simply overlook the facts in a particular situation when what is true in fact is (even strikingly) different from what in theory *ought* to be true.

The idea that the American program was the sole cause of the decline of American cotton exports after 1932 (or 1929 if Federal Farm Board operations are taken into account) has had general currency in this country for many years. A sizeable literature might be referred to.¹⁵

Other studies have attributed the decline of American cotton exports to other factors or to these other factors in conjunction with price-supports and production-control programs. These other factors include growth of foreign rayon production,¹⁶ measures of foreign governments aiming to promote cotton produc-

In 1935 it was decided that a better procedure would be to permit the market price to seek its own level and pay producers the difference between twelve cents a pound and the average level of prices prevailing at ten designated spot-cotton markets on the day the producer made his sale. . . . *Exports from the 1935 crop were considerably larger than from the 1934 crop, as one would expect.* (Italics supplied.)

¹⁴ Consumption of American cotton outside the United States increased by only 218,000 bales in 1935 over 1934 and the proportion of American cotton consumed outside the United States to foreign cotton consumed outside the United States *fell* from 41.30 per cent in 1934 to 40.70 per cent in 1935. Furthermore, American cotton exports as a percentage of the world total increased only infinitesimally from 45.87 per cent in the calendar year 1934 to 45.91 per cent in the calendar year 1935 and actually *fell* to 40.43 per cent in 1936.

With regard to prices, the season average price per pound at Liverpool of Indian cotton was actually *higher* relative to American cotton in 1934 than in 1933. While the similar prices for Brazilian and Egyptian cotton were lower relative to American in 1934 than 1933 the difference was about one per cent in the case of Brazilian cotton and slightly less than two per cent in the case of Egyptian cotton. Small variations in the quality of the cottons from one crop to the next could easily have accounted for these differences. Statistics are drawn or derived from *Agricultural Statistics*, various years.

¹⁵ Alston, H. Garside, *Cotton Goes to Market*, p. 41; Committee on Parity Concepts, "Outline of a Price Policy for American Agriculture for the Post-War Period," in American Farm Economic Association, *Readings on Agricultural Policy*, p. 135; Theodore W. Schultz, "Elements of a Price Policy for Agriculture," in *ibid.*, p. 180; *Tenth Report of the House Special Committee on Postwar Economic Policy and Planning*, (Summary and Conclusions) in *ibid.*, p. 240; Margaret S. Gordon, "International Aspects of American Agricultural Policy," *American Economic Review*, September 1946, XXXVI, part 1, p. 506; Norman S. Buchanan and Friedrich Lutz, *Rebuilding the World Economy*, p. 64.

¹⁶ Food and Agriculture Organization of the United Nations, *World Fiber Survey*, Washington, 1947, p. 39; Calvin B. Hoover and B. U. Ratchford, *Economic Resources and Policies of the South*, p. 313.

tion,¹⁷ international trade barriers,¹⁸ exchange restrictions,¹⁹ and to the absence of peace in the world.²⁰ There appears to be little agreement among these writers as to the significant factors affecting cotton exports nor as to the relative importance of the factors concerning which there is some measure of agreement.

American students of the U. S. cotton economy have been prone to view the foreign producers or potential producers of cotton as a homogeneous group whose position in the world cotton economy is a passive one depending upon the price or supply conditions surrounding American cotton.²¹ This view represents a considerable over-simplification. Each foreign area which grows cotton grows it not only in response to the world price of cotton, but also within the complex of economic, political, and cultural factors which are at work there. Many American students of the cotton problem are fully cognizant of this complex as it affects the acreage and production of cotton in the United States yet they ignore or dismiss as unimportant these same conditions in foreign cotton-growing countries.

It may well be that nationalistic ways of thinking are so ingrained that it is only by a strenuous mental effort that we can free ourselves from them. At least we Americans are not alone in this. An Egyptian student, for example, completes a study of one phase of Egypt's cotton problem with the conclusion that there is a high elasticity of supply in new cotton-growing areas outside Egypt.²² Meanwhile, to some American economists it is the high elasticity of supply of Egyptian cotton that is bothersome.²³

¹⁷ *World Trade Barriers in Relation to American Agriculture*, U. S. Senate, 73rd Congress, 1st Session, Document No. 70, Washington, 1933, pp. 242-250. This report is particularly significant because it was prepared during 1932 and early 1933 before the acreage-restriction program was in operation and before much has been done by way of governmental price-supports. However, it must be said that the authors of this report believed that foreign cotton production in the nineteen-twenties had been quite sensitive to price and supply changes in American cotton. *Ibid.*, p. 243.

¹⁸ L. H. Bean, "Export Prospects for Southern Farm Products," *Southern Economic Journal*, June 1939, VI, p. 18. Bean, incidentally, attributes approximately one-half of the decline of the U. S. cotton export trade between 1923 and 1938 to price-supports and acreage-restrictions. *Ibid.*, pp. 17-18.

¹⁹ *Ibid.*, p. 18; also Carl Williams in *Hearings before a Subcommittee of the Committee on Agriculture and Forestry*, U. S. Senate, 72nd Congress, 1st Session, "To Regulate the Sale of Cotton and Wheat by the Federal Farm Board," Washington, 1932, p. 59.

²⁰ L. H. Bean, "Export Prospects for Southern Agriculture," p. 18; also Joseph S. Davis, "A Desirable Foreign Trade Policy for American Agriculture," *Journal of Farm Economics*, May 1940, XXII, p. 431; H. S. Patton, "Discussion," *Journal of Farm Economics*, Feb. 1938, XX, p. 352. It is interesting that these remarks were made in every case prior to the U. S. entrance into World War II and in two cases prior to the beginning of that war. One can hardly suppose the present international situation to be much less tense than that of 1938.

²¹ One exception to this view should be noted: See statement of Nils A. Olsen in *Hearing before Committee on Agriculture*, 72nd Congress, 1st Session, "Commodity Short Selling," Washington, 1932, p. 286.

²² Mohammed El Said Mohammed, "The Structure and Function of Agricultural Export Trade in the Egyptian Economy," *Journal of Farm Economics*, Aug. 1945, XXVII, p. 701.

²³ E. g., Norman S. Buchanan and Friedrich Lutz, *Rebuilding the World Economy*, p. 64.

Even a brief survey of the other cotton countries of the world should warn us against too hasty or too much generalization. In India the problem of feeding a growing population in a world of bilateral trade puts heavy pressure on agricultural resources for food production.

In Brazil cotton must fit into an agricultural economy based on coffee. In Egypt the technical problem of utilizing the Nile waters is of paramount importance perhaps soon to be superseded in rank by the problem of feeding an ever-increasing number of hungry mouths. China and the U.S.S.R., important cotton producers in their own right, have domestic needs for cotton textiles that stagger the imagination if their levels of living are to be raised even by a small degree. Meanwhile, the international situation leads to Russian cotton exports to eastern Europe that surely cannot be based in any sense on the economic preconditions to foreign trade so well laid down in classical economics.

Throughout central Africa, whether the mother country be Great Britain, France or Belgium, the old problems of colonies have been added to recently by new problems revolving around native progress toward self-government, the conflict between tribal customs and modern social structures, and the need to stimulate the native's desire for the goods of western civilization if the economic incentive is successfully to replace the incentive of the lash. Massive problems—medical, agronomic, financial—remain to be solved before central Africa can begin to fulfill its promise of productivity. In all of this, cotton production and export play an important part as a foreign-exchange producer for the colony and as a cash crop for the native. Cotton-growing policy is, therefore, often divorced from the world market price of cotton, and, thus, from any U. S. agricultural policy which affects this price.

Another approach to better understanding is through asking what countries in the post-war years have significantly increased production and exports of cotton. These turn out to be countries that played no significant part in the cotton picture prior to 1945 and which do not appear to have been affected to any degree by the U. S. agricultural programs of the nineteen-thirties. Specifically, the three most notable are Mexico, Turkey, and Syria. Of these far and away the most striking case is Mexico. Mexican cotton production in 1938 was about the same as in 1912 and slightly less than in 1928—a quarter-million bales. Yet in the 1954-55 season, just ended, Mexico produced more cotton than Pakistan, Brazil, or Egypt. In recent years Mexico has become one of the world's important exporters of cotton. This represents the result of a steady period of growth which began immediately after World War II—a growth which one hesitates to account for on the grounds of U. S. price-supports and acreage controls since these were not even in effect during most of the period.

The over-whelming impression gained from such a world survey is one of great diversity in problems and in prospects for the foreign competitors of the U. S. cotton-grower. Consequently, it is dangerous to generalize about the elasticity of supply of foreign-grown cotton or, for that matter, even as to the direction of the supply curve through the relevant price range in individual cases.

One word should be said about the heart of classical trade theory—compara-

tive costs. The mechanization of the American cotton crop which is proceeding slowly, but surely, and the shift of cotton production in the United States from areas (southeast U. S.) not well-suited to mechanized production to those areas (Mississippi delta and west) which are suited to this type of production will almost certainly improve the U. S. comparative cost situation in cotton since, in effect, this development means a shift from hand labor to machine labor—the right direction for a relatively capital-rich nation like the United States.²⁴

In a very recent study of demand and supply elasticities for agricultural products, Professor Fox has estimated that "a reduction of 5 cents a pound in the price of cotton in all countries would have approximately the following effects:

(1) Demand would increase about one-third of a million bales in this country and about two-thirds of a million in the rest of the world; (2) supply would decrease about four-fifths of a million bales in this country and an equal amount in other countries.²⁵

What would be the effect on U. S. cotton exports and on the other cotton-exporting nations of such a price drop—presently equivalent for American cotton to about fifteen per cent of the Liverpool price?

First, U. S. cotton exports would have to rise about three-quarters of a million bales if *gross* receipts from cotton exports are to be maintained. This is greater than the total increase in the quantity demanded to be expected in the rest of the world. The increase in American cotton exports necessary to maintain the *net* receipts of farmers from exports would, of course, be much higher than this and such an additional increase in exports could only be at the expense of the other cotton-exporting nations.

For Egypt, assuming she could maintain the physical volume of her exports, such a price drop would mean a ten per cent or greater drop in her foreign exchange earnings. Since Egypt's principal import is food and political stability is by no means assured there, one can imagine almost any series of unhappy repercussions. If the physical volume of her exports were also reduced, which would almost certainly be the case if U. S. exports rose sufficiently to maintain the net receipts of the American farmer, the situation would become that much more critical.

For the other cotton-exporting nations this unfavorable change in the terms of trade and possibly in the volume of trade would be felt in varying severity depending, of course, upon the importance of cotton exports in the over-all foreign trade picture. It seems certain, however, that in several countries much, if not all, of the slim margin of foreign exchange available for the importation of capital equipment for development programs would be wiped out.

²⁴ For a somewhat pessimistic view of the probable speed with which the cotton crop may be mechanized see: Calvin B. Hoover and B. U. Ratchford, *Economic Resources and Policies of the South*, pp. 110-114, especially p. 113. A very recent study is J. H. Street's, "Cotton Mechanization and Economic Development," *American Economic Review*, Sept. 1955, XLV, pp. 566-583.

²⁵ Karl A. Fox, "The Use of Economic Models in Appraising Foreign Trade Models," *Journal of Farm Economics*, December 1954, XXXVI, p. 949.

If the tragic (from one point of view) developments outlined above were the result of the operations of an impersonal nineteenth-century market, there would be little to say after we had said we were sorry. But we know, and the rest of the world knows, that such a price drop can come about today only as the result of deliberate action on the part of the United States Government.

Terms of trade have one characteristic in common with price levels. They are wholly relative so that it is not possible to say, except in purely arbitrary fashion, that one particular relation between importing and exporting nations is the "right" or "proper" or "just" one. Thus, it is certainly true that a fall in the world price of cotton would benefit the cotton importing nations and would help the British, for example, ward off inflationary tendencies which appear at present in their economy. Whether there would be a net gain or loss to American foreign policy from a drop in the world cotton price is, therefore, not clear.

In the case of cotton, it may be fruitful to view the United States as the price leader of an oligopoly. Perhaps what we have experienced in cotton on an international scale corresponds roughly to what has happened to the United States Steel Corporation on a national scale over a long period. "Big Steel" had been for many years the price leader in the industry. As such she saw her share of the steel market gradually whittled away by the smaller producers who did not have the responsibility for price maintenance and restricted production which U. S. Steel had assumed.

No doubt the U. S. Steel Corporation executives wish that things had been otherwise so far as their share of the physical volume is concerned. But I rather doubt that if they had it all to do over again that they would act very differently from the way they did act. For the measure of their success is a profit measure, *not* a volume measure.

If we are, in effect, going to combine the American cotton farmers into one "corporation" so far as the world market for cotton is concerned, then it appears that we should judge the success of the scheme much as we would that of an industrial amalgamation.

The sluggishness of supply changes among foreign producers of cotton is such that the United States has the power, within a wide range of prices, of setting the world price of cotton even though acting unilaterally. When this price is set above what would be a free market price, all other cotton-exporting nations (as well as the U. S.) enjoy an improvement in the terms of trade with the cotton-importing nations. This, in effect, acts to favor many of the underdeveloped nations of the world at the expense of western Europe and Japan. Although this is certainly not the *raison d'être* for our cotton program, this is, in fact, one result.

As a consequence of the terms of trade effect, changes in American policy should not be made blindly without regard to the reaction on the economies of many underdeveloped nations, especially India, Egypt, and Brazil. If we were, for example, to devise a cotton policy which would result in what amounted to a competitive world price for cotton, the *price* reaction might well be more serious on the other cotton-exporting nations than the *volume* reaction. Whether we

should aid the underdeveloped nations through our cotton policy is a question which is not considered here. But, having forced the world price of cotton above the competitive level on many occasions in the last twenty years, we cannot lightly withdraw what has been, in fact, a world support-price.

Furthermore, any balanced evaluation of the foreign policy effects of our cotton programs must consider this terms-of-trade result as well as the import restrictions and export subsidies that have, on occasion, been required.

Thus, we find in the relationship between domestic agricultural policy and the international economy the same story of increasing complexity and American governmental responsibility as in many other phases of international affairs today. It should be emphasized that this relationship is not just another example of the inter-dependence which can always be traced between any two events in the world economy. American action or failure to act in the field of cotton policy is direct and important to virtually all of the free world. In the case of some nations it is probably crucial to their own economic programs and even to their political stability.

In this situation it is disturbing that so much of agricultural policy is still being decided in a domestic vacuum, and that some important assumptions about agricultural exports do not, at least in the case of cotton, appear to have very firm foundations.

SECTIONAL DEVELOPMENTS IN ITALY AND THE UNITED STATES

LLOYD SAVILLE

Duke University

Three basic measures—population movements, industrial shifts, and income modifications—reflect intersectional change. Broadly speaking, they show that over the past fifty years and since World War II sectional differences have declined in the United States and increased in Italy. A preliminary exploration of the reasons for these divergencies suggests some basic differences in the economic mores of the two societies. Grossly simplified, the concurrent War of the Risorgimento and the War Between the States were fought to dispel foreign occupation from Italy and to resolve sectional differences in the United States. In Italy the goal of centralized government, a *raison d'être* of the War itself, became the enduring symbol of unified Italy; in the United States the War consolidated and exemplified a widespread opposition to unlimited national authority. This simplification illustrates an intrinsic dissimilarity in economic philosophy between the two countries that is at once a source and a partial explanation of the persistence of contrasting sectional tendencies.

A Basis for Comparison

Specifically, to explore these divergencies requires a selection of comparable areas and suitable periods. The problems associated with choice of places and times are so large as to involve separate investigations of some magnitude. Here it is possible only to utilize broad similarities of regions based on other studies and to choose periods of rough comparability.

Narrower, more homogeneous sections than the North and South must be identified if any degree of precision is to be attained. Prior to the Risorgimento, Italy was a land of four or perhaps five parts: the Kingdom of Sardinia in the Northwest, the area of Austrian domination in the Northeast, Tuscany and the Papal States in the Center, and the Kingdom of the Two Sicilies in the South. Of these traditionally distinct areas the highly industrialized Northwest and the agricultural South constitute two contrasting sections possessing individually both economic consistency and historical unity.¹

Piedmont, Liguria, and Valley of Aosta are modern states making up a relatively homogeneous Northwest. For several hundred years, with the exception of the period of Napoleonic domination, this region and for a time the Island of Sardinia possessed a consistent administration under the House of Savoy. The Island of Sardinia cannot be included in this section, however, for although it

* A paper delivered before the Twenty-fifth Annual Conference of the Southern Economic Association, Atlanta, Georgia, November 12, 1955.

¹ The sections are treated in greater detail in the author's "A Sample of Italian Provinces for Historical Analysis," now in preparation.

furnished the name of the Kingdom of Sardinia to the Northwest and was an active part of the Kingdom for many years it is definitely insular in character and now is in more direct communication with Rome than with Turin. Mainland Northwest, or Terraferma as it was sometimes called, is not only the source of the judicial and administrative law that Cavour transmitted to Italy as a whole but also an early center of Italian industrialism.

South is defined to include the mainland regions south of Rome and the Island of Sicily.² This division produces homogeneity in terms not only of population density and political alignments but also in historical tradition, for the Spanish dominated Kingdom of the Two Sicilies included this precise area. This South has been the economic problem area of the Italian peninsula for many years. At the time of the Risorgimento as the result of successive foreign occupations and feudal law, less than one-fifth of the adult population could read and less than one-fiftieth of the families owned land.

In the United States, New England and the Southeast have certain similarities to the Northwest and South of Italy.³ The New England section was a forerunner in the development of manufacturing particularly in the textile, metal, paper, and leather products industries, those which developed early in Northwest Italy. Besides being the most industrialized section of the United States, this region has other similarities to the Italian Northwest in a relatively low concentration of mineral resources and a high concentration of capital stock. The Southeastern section is notable for its historical consistency for it is largely the *South* of the Confederacy and of the "race problem." Like its Italian counterpart it possesses generally poorer educational and health facilities and still exhibits by far the lowest per capita income of any section of the country.

Before examining changes occurring over the past fifty years, it is appropriate to compare in general terms the relative economic situation in each of these sections at the beginning of the century. Regional differences in Italy were much less marked than they were in the United States. Comparing northwestern with southern Italy, population density was slightly greater, farming occupied a slightly smaller proportion of the population, and income per person was somewhat higher (Table I). Measured by these same important rubrics New England

² Included are the following mainland regions: Abruzzi and Molise, Campania, Puglia, Basilicata, and Calabria. The islands of Sicily and Sardinia are usually grouped as a separate Insular section as in the regions defined by the Italian Constitution (Article 131 of the Constitution approved December 22, 1947). Sometimes however, these islands are included with the section south of Rome in a broader southern Italy; for example, Associazione per lo Sviluppo dell'Industria nel Mezzogiorno (SVIMEZ), *Statistiche sul mezzogiorno d'Italia, 1861-1963* (Rome: Stabilimento Tipografico Fausto Failli, 1954), p. xi, this extremely helpful and complete volume of statistics of the South of Italy is referred to later as SVIMEZ. In this paper, the Island of Sardinia is excluded from the South as it was from the Northwest because its vastly different population density, truly insular character, and divergent political tradition make it a distinctly individual area.

³ The regions include the following states: *New England*—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; *Southeast*—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. This is based on Howard W. Odum, *Southern Regions of the United States* (Chapel Hill, N. C.: University of North Carolina Press, 1936) and is similar to the division used by the Bureau of Foreign and Domestic Commerce but not the Bureau of the Census.

TABLE I

CERTAIN SECTIONAL DIFFERENCES, NORTHWEST AND SOUTH OF ITALY AND NEW ENGLAND AND SOUTHEAST OF THE UNITED STATES, ABOUT 1900

Characteristic	Italy			United States		
	Northwest (1)	South (2)	South as a percent of Northwest (3)	New England (4)	Southeast (5)	Southeast as a per cent of New England (6)
Density of population (persons per square mile).....	329	301	91	84	34	40
Composition of industry (per- cent of working force en- gaged in each)						
Raw material producing.....	57	62	109	13	62	477
Commodity producing.....	25	22	88	42	10	24
Non-commodity producing....	18	16	89	45	28	62
Total.....	100	100	—	100	100	—
Personal income (per capita in 1951 dollars).....	335	149	44	1195	494	41

Source: Appendix Table IV.

exceeded southeastern United States with a population density two and one-half times as great, a concentration of the labor force on commodity production four times as great, and a per capita income more than twice as large.⁴

Some Evidence of Change

Comparable data are difficult to secure. The long period, the exact regions, and the two countries each narrow the availability of suitable statistical material. Because of these problems some broad evaluations of the direction of change over the long run must suffice. Appropriate is a comparison of the tendency of economic movement during the eighty years of national leadership since the Risorgimento on the sections of Italy, and the general outcome of similar developments since the War Between the States on the regions of the United States. In Italy census enumerations in 1901 and 1951 were most useful. In the United States the decennial censuses of population in 1900 and 1950 provided a substantial volume of comparable data.⁵ Some indication of recent change was

⁴ Income figures employed in this comparison are based on 1928-9 data; earlier, less reliable information, shows a somewhat similar situation. Unless specifically noted to the contrary, the facts mentioned in the text may be found in or are derived from the material presented in Appendix Table IV.

⁵ In deciding upon the exact period for investigation consideration was given to the appropriateness of the years for which large amounts of data were available in both countries. Times of general censuses of the population were obvious choices; large quantities of carefully annotated original data are available for each so that usable information could be developed by selection and adjustment. For example, obtaining such simple information as population density required recourse to original figures, for Italian densities are usually computed on the basis of total terrain while in the United States they are based on total terrain less the area of larger lakes and rivers. In making the final choice the Italian censuses in 1871 and 1881 were discarded; coming so close after the end of hostilities in a period of rapid change their unique values provide a poor basis for comparison.

TABLE II

CERTAIN SECTIONAL CHANGES, NORTHWEST AND SOUTH OF ITALY AND NEW ENGLAND AND SOUTHEAST OF THE UNITED STATES, ABOUT 1900 TO ROUGHLY 1950

Characteristic	Italy		United States	
	Northwest (1)	South (2)	New England (3)	Southeast (4)
Population				
<i>Density</i> (change in persons per square mile)	+66	+121	+56	+26
<i>Natural increase</i> (change in excess of live births over deaths per 1,000 population) . . .	-8	+3	+2	-1
Production (change in percentage of total number of persons engaged in industry)				
<i>Raw material producing</i>	-25	-8	-9	-36
<i>Commodity producing</i>	+14	0	+3	+16
<i>Non-commodity producing</i>	+11	+8	+6	+20
Income (change in personal income per capita in constant, 1951 dollars) 1928 to 1951	+24	-11	+621	+630

Source: Appendix Table IV; note that dates are approximate only.

secured by using the Italian census of 1936 in conjunction with the United States census of 1940.⁶

Emphasis is given to three aspects of the economy: population movements, industrial shifts, and income changes. In each case it was not possible to utilize exactly comparable material from both countries. In general, however, differences in emphasis and approach produced varying descriptions of the same phenomena. For example, tax figures were used to verify the trend of income in Italy because minutely detailed information is available concerning local, intermediate, and national fiscal activity; special studies of income were used for corroboration in the United States because fiscal data comparable with Italy's is not published here.

Italy—Divergent population changes are among the most important economic factors in the relative development of the sections of Italy. Increases in the density of population during the past fifty years have been twice as large in the South as in the Northwest, a differential that has been accelerating in the recent past (Table 2). For the South this one fact has turned economic advances when measured in absolute amounts into economic declines when viewed from the perspective of per capita change. Thus, in the housing field even the construction of almost one million new rooms during the last twenty years becomes a net loss when compared with an increase in population during the same period of two and one-half million persons.⁷

⁶ Choice lay between post-World War II and the mid-thirties as a time of comparison with the present. Turbulence following the War adversely influenced various economic measures especially in Italy; fluctuations during the recovery phase of the great depression modified many statistical measures particularly in the United States. Since the problems of the thirties are easier to compensate for than the post-War turmoil, the earlier year was chosen.

⁷ *SVIMEZ*, *op. cit.*, p. 123.

Causal factors of natural increase and migration reinforce a slight decline in the Northwest and tend to offset each other in the South; compared with a change of minus eight in the Northwest the excess of live births over deaths has increased a plus three per thousand in the South. Migration abroad, important to all of Italy in the early part of the period, now accounts for little more than one-third of the natural increase even in the South while migration from abroad to Italy and internal migration of Italians from section to section is relatively unimportant particularly in the South.⁸ Thus, in contrast with the Northwest, the South has a rapidly growing population little influenced by domestic or foreign immigration.

Compared with industrial advances in the Northwest, relatively small changes in the production pattern of southern Italy have occurred in the past half century. Measured by labor force utilization, the industry mix in the Northwest has moved from a general intersectional comparability at the beginning of the century to a substantially greater concentration on commodity and non-commodity production at the expense of raw material production, especially farming, at the present time. In the South, smaller alterations have taken place as non-commodity producing industries, such as trade, transportation, and services, have expanded relative to raw material producing. Thus, for example, the number of hotel rooms, and tourist facilities generally in the South,⁹ have expanded by one-fifth in the past several years while farming has occupied a slightly smaller proportion of the total labor force.

Per capita income in the South has been declining progressively relative to the Northwest since the beginning of the century. According to taxable income shown on assessment rolls, a study by the Regional Statistical Office in Palermo,¹⁰ and one by Professor Tagliacarne,¹¹ individual income in the South has become less and less in comparison with the income of persons in the Northwest. Between 1928 and 1951, measured in dollars of constant purchasing power, average income in the South *decreased* eleven dollars while it *increased* twenty-four dollars in the Northwest.

Current wage data provide evidence of the continuation of this trend. Two types of earnings information are in common use—actual and contractual. Actual wage information reported by the Ministry of Labor¹² is collected from firms employing ten or more workers. Contractual wage data published by the

⁸ For example, of the resident population of the South in 1901 only ten persons in every thousand had moved there from other parts of Italy and abroad and only seventeen persons in every thousand born in the South were living in other parts of Italy; Direzione Generale della Statistica, *Annuario statistico italiano: 1905-1907* (Rome: Tipografia Nazionale di G. Bertero e C., 1907), Fascicolo primo, pp. 104-5.

⁹ *SVIMEZ*, *op. cit.*, p. 570.

¹⁰ *SVIMEZ*, *op. cit.*, p. 683.

¹¹ *Calcolo del reddito private e della pubblica amministrazione nelle provincie e regioni d'Italia nel 1952* (Rome: 1953).

¹² Ministero del Lavoro e della Previdenza Sociale, *Statistiche del lavoro*, published quarterly in Rome.

Central Statistical Institute¹³ and the National Industrial Association¹⁴ are derived from wage rates specified in union-trade association agreements. Average wages from all three sources are somewhat higher especially in the South than the true average of wages paid in an industry or a region. Two factors are relevant: (1) Reports are obtained from larger firms, more prevalent in the Northwest which tend to adhere to contractual scales more consistently than smaller firms particularly in the South. (2) Averages sometimes include family allowance payments which tend to be higher in the South where family size is larger.

Current releases by each of these organizations show large regional wage inequalities. In the post-World-War II period changes in sectional wage differentials and increases in family allowance payments have reduced the discrepancies in wage schedules between the two sections. However, when these income changes are measured against the relative changes in population during the period and the bias inherent in the data, the probable net effect is again a decline in per capita income compared with the Northwest.

Larger family size and less mobility tend to produce a proportionately smaller working force and lower individual income. Also important to the South, however, is the unavailability of income sources. Capital invested in industry (1939) was only one-quarter as great as it was in the Northwest while the *nominal* amount of capital in 1951 was only one-tenth of the Northwest's, and even the value of agricultural products—the chief source of income in the South—was one-fifth lower than in the Northwest.¹⁵ Utilization of this limited income has of necessity resulted in lower attainments in the South: infant mortality is 50 per cent greater, housing is twice as crowded, and in the labor force only two-thirds as many persons have education beyond the elementary school level.¹⁶

United States—In contrast with these growing sectional divergencies a pattern of intersectional equalization has been taking place in the United States. Based on the same broad rubrics and as far as possible on statistical data of the same type, regional differences between New England and the Southeast have been declining over the past fifty years (Table II).

Population densities in both areas increased over the full period at roughly the same rate. This was the net result of a substantial rate of natural increase and migration into and out of the sections. As a result of these changes the native born is becoming increasingly important in New England and decreasingly in the Southeast. Thus, sectional populations are becoming more similar in their content.

Contrasted with New England's fixed production pattern, the Southeast's industry mix continued to shift rapidly over the fifty years. As early as 1900 more than two-fifths of the gainfully employed in New England were engaged in commodity production in the construction and manufacturing industries and a second

¹³ Istituto Centrale de Statistica, *Bollettino mensile di statistica*, published monthly in Rome.

¹⁴ Confederazione Generale della Industria Italiana, *Rassegna di statistiche del lavoro*, published bimonthly in Rome.

¹⁵ *SVIMEZ*, *op. cit.*, pp. 332, 412, 263.

¹⁶ *SVIMEZ*, *op. cit.*, pp. 103, 123, 606.

TABLE III

CERTAIN SECTIONAL DIFFERENCES, NORTHWEST AND SOUTH OF ITALY AND NEW ENGLAND AND SOUTHEAST OF THE UNITED STATES, ABOUT 1950

Characteristic	Italy			United States		
	North-west	South	South as a per cent of North-west	New England	South-east	South-east as a percent of New England
	(1)	(2)	(3)	(4)	(5)	(6)
Density of population (persons per square mile).....	395	422	107	140	60	43
Composition of industry (percent of working force engaged in each)						
<i>Raw material producing</i>	32	54	169	4	26	650
<i>Commodity producing</i>	39	22	56	45	26	58
<i>Non-commodity producing</i>	29	24	83	51	48	94
Total.....	100	100	—	100	100	—
Personal income (per capita in 1951 dollars).....	359	138	38	1,816	1,124	62

Source: Appendix Table IV.

two-fifths in non-commodity production or in trade, services, transportation, and government. In the Southeast starting from a dependency of more than three-fifths of the labor force on agriculture and raw material production in general, commodity production increased one and one-half times and non-commodity production more than two-thirds.

As a result of this increased industrialization and other factors, per capita income in the Southeast has made a greater relative improvement than New England's. Between 1929 and 1951 real personal income in New England increased by one-half, in the Southeast it more than doubled. In dollars of current purchasing power the changes were approximately the same. On the more precise plane of hourly wage rates for comparable employment it has been known for some time that payments in some occupations in some industries were actually higher in the Southeast than in New England.¹⁷

Before examining some explanations for the contrasting sectional developments in Italy and the United States it is instructive to consider the present levels of economic attainment in these sections of the two countries. Table 3 brings the material presented in Table 1 up to date. Density of population in southern Italy is now greater than in the Northwest and over seven times as great as in southeastern United States. Industrially more than half of the labor force in the south of Italy is dependent on farming, fishing, and mining. In southeastern United States the dependence has dropped to slightly more than one-quarter, somewhat less even than its importance in the relatively industrialized northwestern Italy. Among the economically essential manufacturing

¹⁷ Richard A. Lester, "Trends in Southern Wage Differentials since 1890," *Southern Economic Journal*, 1945, XI, p. 336 and the author's "Earnings of Skilled and Unskilled Workers in New England and the South," *The Journal of Political Economy*, 1945, LXII, pp. 400-2.

and construction firms, the relative numbers of workers in southern Italy have not increased. And further, they are now proportionately only about half as important as comparable workers in the Northwest, and even less numerous than they are in the southeastern part of the United States. Finally, per capita personal income in southern Italy is less than one-eighth as large as it is in southeastern United States.

A comparison of columns numbered (3) and (6) in Table I with the similarly numbered ones in Table 3 gives a rough indication of the proportionate changes in these fundamental economic characteristics between 1900 and 1950. In Italy's South relative increases are recorded for density of population and raw material production, unfavorable changes in the sense that more population and greater reliance on agriculture tend to lower living standards of an area. On the other hand, relative declines are shown in commodity and non-commodity production, and per capita income, changes which would seem also to entail obvious economic losses. In the Southeast of the United States the ratios are in the direction of equality in each case except raw material production where the small amount involved in New England distorts the percentage change. Thus, strong divergent currents of sectionalism have been increasing the economic separation between the Northwest and South of Italy while they have been narrowing the disparity between the sections of the United States.

Some Anticipation of Future Change

Backward areas in both nations face the same basic problem of bringing about a relative increase in per capita income. Each has relied primarily on efforts to produce more goods and services, and has thought less of plans to change the size and structure of the population. The importance of this latter solution is suggested in the following analysis in which some evidence supports the thesis that it will be relatively impossible to achieve sectional equality in living standards without major population adjustments.

United States—Well known are the factors influencing the relative growth of industry in the Southeast. Low labor costs brought about by a high rate of natural increase, rapid displacement of agricultural workers, and low amounts of unionization are followed in importance by lower expenses for fuel, state and local taxes, and power. These latter more than offset the higher costs of locating a new plant in a new environment and paying the occasional extra expenses of crosshauling raw and finished materials.¹⁸

Even though the magnitude of these advantages may have declined through increased resource utilization, labor mobility, and union practices, a relative advantage still exists. And, a sizeable relative increase in investment within the area can be anticipated for some time. Full per capita income equality between the sections, however, cannot be expected promptly. As Professors Hoover and Ratchford have pointed out, higher birth rates, larger families, and proportionally

¹⁸ James A. Morris, *Woolen and Worsted Manufacturing in the Southern Piedmont* (Columbia, S. C.: University of South Carolina Press, 1952), pp. 99-158; and Seymour E. Harris, *Report on the New England Textile Industry* (Cambridge, Mass.: Committee Appointed by the Conference of New England Governors, 1953), pp. 5-7.

smaller numbers of gainfully employed effectively lower income averages in the Southeast compared with those in New England. So that, equal worker incomes can never result in equal per capita incomes as long as there exist these differences in population structure.¹⁹

Since the beginning of the century the proportionate number of gainfully employed in the Southeast has been 10 per cent smaller than in New England. This differential stands as an impressive barrier to the equalization of incomes. To overcome it would require, of course, reduction in population gains sufficiently large to offset the increments from reduced infant mortality and increased life expectancy. Drains of population to other sections has been an important compensation. More in keeping with the magnitude of the problem, however, is the possibility of reducing the birth rate, so that population gains will not absorb such a large proportion of economic advances.

It may be that this rate is susceptible to change through education, broadly defined to include not only literacy in the economics of alternative uses and means but also more exposure to the possible physical rewards of an industrialized society.²⁰ Thus in the future, population adjustment instead of industrial change may become a more important device for improving the relative income standing of the Southeast.

Italy—Southern Italy is relatively less attractive to new industrial investment than southeastern United States. Labor availability through unemployment and underemployment is offset by substantial unemployment in the Northwest.²¹ Labor cost differentials are muddled by the publication of "contractual" wage information which inflates southern wages above their real level, and the payment of family allowances by industry which increases wages of workers in the South where families are large.²² Some local taxes on industry are higher in the South; for example, communal and provincial tax rates on industrial property were almost twice as high in the South as in the Northwest.²³ This cursory check among three of the more important advantages of locating indus-

¹⁹ Calvin B. Hoover and B. U. Ratchford, *Economic Resources and Policies of the South* (New York: The Macmillan Company, 1951), pp. 19-29.

²⁰ In southern Italy for example, between 1936 and 1951 the greatest declines in the crude birth rate occurred in the northern section of the South—the area most exposed to the educational impact of new forces and new ideas. Istituto Centrale di Statistica del Regno d'Italia, *Annuario statistico italiano: 1937* (Rome: Istituto Poligrafico dello Stato, 1937), pp. 16-7; and Istituto Centrale di Statistica, *Annuario statistico italiano: 1952* (Rome: Istituto Poligrafico dello Stato, 1953), pp. 30-1.

²¹ *SVIMEZ*, *op. cit.*, p. 645; and Alessandro Molinari, "Occupazione, disoccupazione e sottoccupazione nei paesi sovrappopolati e nel Mezzogiorno d'Italia," *Statistica*, XIV (1954), pp. 611-44. Population projections indicate that labor shortages may develop in the Northwest within the next several years, so that this incentive for locating in the South may improve in the future; Ezio Vanoni, *Schema di sviluppo dell'occupazione e del reddito in Italia nel decennio 1955-1964* (Rome: 1955), p. 81.

²² Istituto Centrale di Statistica, *Bollettino mensile di statistica*, *op. cit.*, Confederazione Generale della Industria Italiana, *Rassegne di statistiche del lavoro*, *op. cit.*, and Ministero del Lavoro e della Previdenza Sociale, *Statistiche del lavoro*, *op. cit.*, in each instance issues for the year 1954 were employed.

²³ Ministero dell Finanze, *Bollettino ufficiale*, May 1952, Supplemento ordinario N. 5, pp. 86-7.

trial plants in backward areas has failed to show a single example of differential cost advantage comparable with those offered by southeastern United States.

Because of these difficulties national intervention to develop the backward areas of Italy has been instituted. The social and economic program submitted to Parliament by Prime Minister Segni in July was based on the Ten-Year-Vanoni Plan which has as one of its prime objectives the reduction of the economic gulf between the North and the South. This plan proposes investment programs in agriculture, public utilities, and public works; it also foresees larger exports and the formation of a skilled labor force.

More specific to southern improvement was the creation in 1950 of the *Cassa per il Mezzogiorno*, a government organization to administer a program of southern development until 1962. Its budget of two billion dollars has been supplemented by three loans from the World Bank amounting to ninety million dollars. The most recent of these supports an irrigation project in Sicily, power stations and a transmission line on the mainland, and eight industrial projects involving cement, fertilizer, insecticides, citrus-fruit concentrate, woolen yarns, and pulp and paper; activities associated with reclamation and development of southern agriculture and the betterment of Italy's trade balance.²⁴

These valuable and much needed projects are important steps in the program of overcoming southern Italy's industrial lag and agricultural deterioration. They stress, however, the provision of more investment to produce a larger product instead of concentrating a comparable amount of attention on the problem of an expanding population. In this manner they establish goals which cannot envisage a reversal of the trend of growing North-South economic inequality.

Using the extremely blunt tools of straight-line projection some simple evaluation is possible. The rate of natural increase of the population during the past few years has been a relatively constant two hundred thousand per year.²⁵ At this rate when the *Cassa* plan ends in 1962, the population of the South will have increased by roughly two and one-quarter million persons above the last census in 1951. If the same proportion of the labor force is to be employed as at present this additional population will require eight hundred thousand new jobs. If current unemployment is to be eliminated the total of new jobs will be pushed to twice this number or about one million six hundred thousand. And, to approximate the living standards of the Northwest, assuming equally efficient labor force utilization, will require the gainful employment of about the same proportion of the population as the Northwest or an increase of almost three million in the number of jobs in the South.²⁶

²⁴ International Bank for Reconstruction and Development, *Loan Agreement (Electric Power, Irrigation and Industrial Projects) between International Bank for Reconstruction and Development and Cassa per Opere Straordinarie di Pubblico Interesse nell'Italia Meridionale (Cassa per il Mezzogiorno)*, Loan number 117 IT, dated June 1, 1955, pp. 16-24. The area serviced by this loan is the exact South defined in this paper.

²⁵ Istituto Centrale di Statistica, *Annuario statistico italiano: 1951* (Rome: Istituto Poligrafico dello Stato, 1951), p. 43; *Annuario statistico italiano: 1952 op. cit.*, p. 31; and *Annuario statistico italiano: 1953, op. cit.*, p. 37.

²⁶ Labor force projections computed from *SVIMEZ, op. cit.*, pp. 601, 620-33; and Appendix Table 5, are not adjusted for migration.

Neither the *Cassa* plan nor even the Ten-Year-Vanoni Plan envisages increases of this magnitude. The *Cassa* plan expects to create employment for about two hundred and fifty or three hundred thousand workers and anticipates that the facilities provided by the plan will attract private capital to the South.²⁷ The Vanoni plan foresees the creation of eight hundred thousand new jobs in the South by the end of ten years and assumes that one-half million workers will migrate abroad.²⁸

The probability of achieving sufficient new private investment to create the many new jobs needed to supplement these plans seems to be as small as the possibility of implementing this amount of migration. Because of tightness in domestic capital markets both government and private corporations have secured funds in the Swiss market where Italian government sanctions are not required and interest rates are only two-thirds as high.²⁹ Foreign objections to new immigration are growing. Recently, for example, British miners stymied a plan to introduce Italian workers into pits where labor shortages existed.³⁰ Thus, it would seem on the basis of this brief analysis that, under present conditions and programs, the gulf between the Northwest and the South will continue and probably expand.

Backward areas in the two nations are fundamentally different in the sense that sectionalism is growing in one and declining in the other. There is a degree of similarity between them, however, in the thought that population growth and structure are keys to the ultimate attainment of economic equality with other areas. In Italy the problem is especially grave since national intervention has been required and the start toward equalization is yet to be initiated. She is faced with the difficult necessity that she absorb the fruits of progress in the form of further additions to her population through reduced infant mortality and increased life expectancy while she still strives to increase the living standard of the whole population.

Transition from an agrarian to an industrial economy is a rugged one in which the seeds of revolution are present. In this situation, however, doctoring the growing pains of economic development with revolution probably would only worsen conditions, since modern revolutionaries have a predilection for prescribing more population rather than less to the patient. Even a miracle would not be of great assistance, for the discovery of large oil or coal deposits would produce only local employment gains while the larger income gains would inevitably be shared with

²⁷ International Bank for Reconstruction and Development, *Press Release*, N. 263, dated October 11, 1951, p. 5.

²⁸ Ezio Vanoni, *op. cit.*, p. 83.

²⁹ For example, early in 1954 a Swiss banking group granted twenty-three million dollars to an organization of the Italian government for financing small and medium-sized industrial firms (*Neue Zürcher Zeitung*, Zürich, March 18, 1954, section 10); and later in the same year a twelve million dollar private loan was floated in Switzerland by *Montecatini*, the leading Italian firm in the mining and chemical industry for the purposes of expanding the fixation of atmospheric nitrogen, the making of organic chemical products, and the exploitation of natural gas resources in Sicily (*The Statist*, London, November 27, 1954, pp. 694, 696).

³⁰ *The Economist*, London, August 6, 1955, p. 493.

other regions. What is needed is social revolution in which social mores change from those of peasant to those of worker, and the immediate goal of simple survival is replaced by an active demand for the fruits of modern technology.

Summary

1. Sectionalism is increasing between the Northwest and the South of Italy and decreasing between New England and the Southeast of the United States. To the extent that the measures examined are representative of all economic measures and all sections of both countries, they indicate a general widening of the economic gulf between the backward and progressive areas in Italy and a narrowing of it in the United States.

2. Present trends and programs will neither reverse the tendency toward increased sectionalism in Italy nor ultimately produce complete equality in the United States. Existing Italian programs do not match the magnitude of the forces involved and persisting discrepancies in gainfully employed-population ratios in the United States render extremely remote the eventual closing of the income gap between the areas.

3. Education may be the only practical answer to the backward area problem of both nations. When there is a rapid population growth in the backward area, the volume of funds available for investment in the area from domestic and foreign markets is not large enough to bring about equality in standard of living with other areas. Education, however, offers the promise of facilitating the troublesome transition from an agricultural society to an industrial one not only by enabling the individual to produce more by the efficient utilization of individual initiative, but also to realize for himself the economic alternatives available to him in an industrial society.

APPENDIX
TABLE IV

CERTAIN SECTIONAL STATISTICS AND CHANGES THEREIN, NORTHWEST AND SOUTH OF ITALY
AND NEW ENGLAND AND SOUTHEAST OF THE UNITED STATES, ABOUT 1900, 1936, AND 1950

Characteristic	Italy			United States		
	Actual year	Northwest	South	Actual year	New England	Southeast
Population						
<i>Density (persons per square mile)*</i>						
1900.....	1901	329	301	1900	84	34
1936.....	1936	370	366	1936	138	54
1950.....	1951	395	422	1950	140	60
Change 1900-1936.....	—	+41	+65	—	+54	+20
Change 1936-1950.....	—	+25	+56	—	+2	+6
Change 1900-1950.....	—	+66	+121	—	+56	+26
<i>Natural increase (excess of live birth over deaths per 1,000 population)†</i>						
1900.....	1905	+6.8	+11.5	1890-1900	+8.9	+18.4
1936.....	1936	+0.8	+13.0	1936	+2.7	+8.7
1950.....	1951	-1.3	+14.0	1950	+10.5	+17.2
Change 1900-1936.....	—	-6.0	+1.5	—	-6.2	-9.7
Change 1936-1950.....	—	-2.1	+1.0	—	+7.8	+8.5
Change 1900-1950.....	—	-8.1	+2.5	—	+1.6	-1.2
<i>Production (percentage of total number of persons engaged in industry)‡</i>						
<i>Raw material producing</i>						
1900.....	1901	57	62	1900	13	62
1936.....	1936	38	58	1940	5	38
1950.....	1952	32	54	1950	4	26
Change 1900-1936.....	—	-19	-4	—	-8	-24
Change 1936-1950.....	—	-6	-4	—	-1	-12
Change 1900-1950.....	—	-25	-8	—	-9	-36
<i>Commodity producing</i>						
1900.....	1901	25	22	1900	42	10
1936.....	1936	35	20	1940	44	22
1950.....	1952	39	22	1950	45	26
Change 1900-1936.....	—	+10	-2	—	+2	+12
Change 1936-1950.....	—	+4	+2	—	+1	+4
Change 1900-1950.....	—	+14	0	—	+3	+16
<i>Non-commodity producing</i>						
1900.....	1901	18	16	1900	45	28
1936.....	1936	27	22	1940	51	40
1950.....	1952	29	24	1950	51	48
Change 1900-1936.....	—	+9	+6	—	+6	+12
Change 1936-1950.....	—	+2	+2	—	0	+8
Change 1900-1950.....	—	+11	+8	—	+6	+20

TABLE IV—Continued

Characteristic	Italy			United States		
	Actual year	Northwest	South	Actual year	New England	Southeast
Labor force (number of persons per 100 of total population gainfully employed) [‡]						
1900.....	1901	55	47	1900	42	38
1936.....	1936	51	37	1940	36	33
1950.....	1952	47	36	1950	38	34
Change 1900-1936.....	—	-4	-10	—	-6	-5
Change 1936-1950.....	—	-4	-1	—	+2	+1
Change 1900-1950.....	—	-8	-11	—	-4	-4
Income (personal income per capita in constant, 1951 dollars) [§]						
1928.....	1928	335	149	1929	1195	494
1938.....	1938	370	154	1938	1208	547
1951.....	1951	359	138	1951	1816	1124
Change 1928-1938.....	—	+35	+5	—	+13	+53
Change 1938-1951.....	—	-11	-16	—	+608	+577
Change 1928-1951.....	—	+24	-11	—	+621	+630

* Italy: 1901—Direzione Generale della Statistica, *Annuario statistico italiano: 1905-07* (Rome: Tipografia Nazionale di G. Bertero e C., 1907), Fascicolo primo, pp. 54-67; 1936—Istituto Centrale di Statistica del Regno d'Italia, *Annuario statistico italiano: 1938* (Rome: Istituto Poligrafico dello Stato, 1938), pp. 13-4; 1951—*Population data*, Istituto Centrale di Statistica, *Annuario statistico italiano: 1953* (Rome: Istituto Poligrafico dello Stato, 1953), pp. 27-8 and *Area data*, Istituto Centrale di Statistica, *Annuario statistico italiano: 1951* (Rome: Istituto Poligrafico dello Stato, 1951), p. 3. United States: 1900—Treasury Department, *Statistical Abstract of the United States: 1902* (Washington: Government Printing Office, 1903), pp. 13, 24-5; 1936—Bureau of the Census, *Statistical Abstract of the United States: 1938* (Washington: U. S. Government Printing Office, 1939), pp. 1 and 9; 1950—Bureau of the Census, *Statistical Abstract of the United States: 1952* (Washington: U. S. Government Printing Office, 1952), pp. 7, 13-4. Population figures for Italy converted from hectare and square kilometer units to square mile basis, all densities computed from territory figures which included both land and water.

† Italy: 1905—*Annuario statistico italiano: 1905-07*, op. cit., pp. 134-7; 1936—Istituto Centrale di Statistica del Regno d'Italia, *Annuario statistico: 1937* (Rome: Istituto Poligrafico dello Stato, 1937), pp. 16-7; 1951—Istituto Centrale di Statistica, *Annuario statistico italiano: 1952* (Rome: Istituto Poligrafico dello Stato, 1953), pp. 30-1. United States: 1890-1900—U. S. Census Office, *Vital Statistics* (Washington: U. S. Census Office, 1902), Part I, p. iv; 1936—*Statistical Abstract of the United States: 1938*, op. cit., pp. 88-90; 1950—Bureau of the Census, *Statistical Abstract of the United States: 1953* (Washington: U. S. Government Printing Office, 1953), pp. 65 and 73. United States figures for 1890-1900 are a mean for the period; they contain a substantial downward bias since registration of births and deaths were not complete from the states in these areas at that time.

‡ Italy: 1901—*Annuario statistico italiano: 1905-07*, op. cit., pp. 112-5; 1936—Istituto Centrale di Statistica del Regno d'Italia, *VIII Censimento generale della popolazione, Volume IV—Professioni, Parte seconda—Tavola, B) Industria, Commercio Ecc.—Condizioni non professionali, 1. Regno* (Rome: Tipografia Fialle, 1939), pp. 3, 4, 6, 35-7, 67-75,

TABLE IV—Continued

Footnotes Concluded

122-3, 132-7, and 196-7; 1952—Associazione per lo Sviluppo dell' Industria nel Mezzogiorno (SVIMEZ), *Statistiche sul mezzogiorno d'Italia: 1861-1953* (Rome: Stabilimento Tipografico Fausto Failli, 1954), pp. 393 and 601. Data from 1901 and 1936 are from the census of the population and include persons aged 10 and over engaged in gainful employment during the greater part of the year; for 1952 they are based on a sample taken on September 8, 1952 by the Parliamentary Commission on Unemployment in which unemployed persons less than 14 years of age are excluded. Workers in the broad classification *Industria* in this sample have been apportioned among the Raw material, Commodity, and Non-commodity categories in proportion to the importance of each of these groups in the larger Census of Industry study made on November 5, 1951. United States: 1900—Bureau of the Census, *Special Reports—Occupations at the Twelfth Census* (Washington: Government Printing Office, 1904), pp. 94-113; 1940—Bureau of the Census, *Sixteenth Census of the United States: 1940, population, Volume III, Labor Force, Part 1: United States Summary* (Washington: U. S. Government Printing Office: 1943), pp. 180-1; 1950—Bureau of the Census, *Census of the Population: 1950, Volume II—Characteristics of the Population, Part I—United States Summary* (Washington: U. S. Government Printing Office, 1953), pp. 1-132. In 1900 United States figures were based on gainfully employed persons 10 years old and over, in 1940 and 1950 they included those 14 years old and older. The change in definition makes no discernible difference in the figures for New England since those in the labor force from age 10 to 14 years amounted to less than 0.2 per cent in 1900; in the Southeast, although this proportion was about 5 per cent, a cursory check of the occupations of these young people reveals no particular concentration in any one of the industry groups employed here. Thus no appreciable error seems to be involved by this change in definition. The following industry segregation was employed: Raw material production—agriculture, fishing, and mining; Commodity production—manufacturing and construction; and Non-commodity production—wholesale and retail trade, services, transportation, and government.

§ Italy: 1928 and 1938—Centro regionale di ricerche statistiche di Palermo, *Stime del prodotto netto private della Sicilia nel quadro della ripartizione regionale del prodotto netto Italiano* (Palermo: 1952) summarized in *SVIMEZ op. cit.*, p. 683; 1951—Guglielmo Tagliacarne, "Calcolo del reddito private nell Province e Regioni d'Italia per il 1951" *XIII Riunione Scientifica della Società Italiana di Statistica*, also summarized in *SVIMEZ, op. cit.*, p. 683. Incomes were reported in constant, 1938 lire; they were converted to 1951 lire by employing the 1938-1951 cost of living ratio, they were then converted to dollars by use of the rate 625 lire equaling 1 dollar. A calculation of sectional per capita income by the author based on income published in tax rolls revealed income trends in the Northwest and the South similar to those shown in this table. United States: All years—Charles F. Schwartz and Robert E. Graham, Jr., "Personal Income by States, 1929-54," *Survey of Current Business*, Sept. 1955, Vol. 35, No. 9, pp. 16-7. Current dollar figures were converted to 1951 base by use of the consumer Price Index (1947-49 = 100).

AN ECONOMIC POLICY FOR A DEPENDENT ECONOMY

ENRIQUE LERDAU*

Carnegie Institute of Technology

I. INTRODUCTION

This paper sums up some results of a study of New Zealand's balance of payments.¹ It then proceeds to use these results for an assessment and re-evaluation of an important policy proposal which has been made recently for New Zealand by Professor C. G. F. Simkin.² This proposal is of interest transcending the boundaries of New Zealand because the writer believes that many of the conclusions arrived at here will apply also to some other dependent economies.³ The Simkin proposal for internal economic stabilization was to have flexible exchange rates for foreign trade transactions, while keeping a fixed rate for most other items. The flexible rate would be a single rate for exports and imports, manipulated so as to offset changes in the price index of imported commodities (i.e., keeping the cost of a market basket of imports constant in New Zealand currency). Two more or less separate questions will be dealt with: (a) is this policy viable in view of the relevant structural characteristics of the New Zealand economy; and (b) is it a "good" policy in view of the criteria accepted by the International Monetary Fund?

II. STRUCTURAL CHARACTERISTICS

For obvious reasons, it is vital to make a judgment on whether New Zealand's balance of payments is "stable" in the text book sense. In other words, does currency devaluation turn it more active (less passive) and does appreciation have the opposite results?

A substantial literature has developed to specify conditions of stability of the trade balance in terms of the elasticities of supply, demand, and substitution of imports, exports, competing commodities, et cetera.⁴ While it is usually impossible to measure all the relevant elasticities, it can be shown that those of

* I have received helpful criticisms from Dean G. L. Bach and Professor E. Grunberg, both of the Carnegie Institute of Technology. They are, of course, not responsible for any shortcomings of this paper.

¹ The calculations performed are described in detail in my doctoral dissertation "International Trade and Finance in New Zealand, 1930-1945" (Library of the University of Wisconsin, 1955). It will be referred to below simply as *Thesis*. Limitations of space will make it necessary in many cases to refer the reader to this source.

² C. G. F. Simkin, "Monetary Policy and Economic Stability," *Economic Stability in New Zealand*, ed. by R. S. Parker (Wellington, 1953).

³ The term "dependent" economy is here used to connote an economy with two main characteristics: (a) that it derives a substantial proportion of its national income from foreign trade, and (b) that the magnitude of foreign induced cyclical fluctuations tends to swamp domestic business cycles.

⁴ Among the main contributions are G. Haberler, "The Market for Foreign Exchange and Stability in the Balance of Payments," *Kyklos*, 1949; A. Hirschman, "Devaluation and the Trade Balance," *Review of Economics and Statistics*, February 1949; P. T. Ellsworth and M. Bronfenbrenner, "Exchange Rate and Exchange Stability," *ibid.*, February 1950.

demand for the supply of exports and imports are sufficient to determine stability⁵ (since the others can be regarded as causes determining the final elasticities). Part of this paper will therefore be concerned with the available information on these parameters.

But it should be clear that only when other items on current account and capital movements are insignificant is it possible to translate statements about the stability of the trade balance into statements about the balance of international payments. In the past these other items have been by no means insignificant for New Zealand.⁶ Not only did the country have to service, before World War II, a large public foreign debt, which meant an average interest charge of £ St. 7,000,000 per year, but it also had to contend with very considerable private capital movements.⁷ In the future only the private capital item will remain as a problem, the public foreign debt having been mostly paid off at the end of World War II.

The following discussion of stability must therefore be interpreted as referring to the balance of payments only on the assumption that no capital items are allowed to interfere.

By means of least squares regression analysis, the following parameters were found⁸ on the export demand side:

(a) British demand for New Zealand butter:

Income elasticity of demand: 2.02 (± 0.44)

Price elasticity of demand: -1.19 (± 0.14) (Deflated by British retail price index)

⁵ Lloyd Metzler, "The Theory of International Trade," *A Survey of Contemporary Economics*, Vol. I, ed. by Howard Ellis. As Metzler and Hirschman (*op. cit.*) point out, however, strictly speaking the size of the original imbalance is another relevant variable. In the literature formal stability conditions are usually stated under the assumption of export-import equality.

⁶ See A. H. Tocker, "The Monetary Standards of Australia and New Zealand," *Economic Journal*, 1924.

⁷ No official statistics exist for these. Rough estimates by this writer indicate that in the whole period from 1929 to 1944 a net outflow of only £ St. 2,700,000 occurred, but that total outflows, in ten of those years came to £ St. 38.8 million, while inflows, in six years, totalled £ St. 36,100,000. This leads to the conclusion that (a) much of these flows consisted in speculative, short run movements, and (b) in individual years the size of these "hot money" flows was large enough to be a very disturbing influence (often being a multiple of the trade balance). The method of calculation is described in detail in Ch. 1 of *Thesis*.

⁸ For details on (a), (b) and (c) see my "British Demand for New Zealand's Exports," *The Canadian Journal of Economics and Political Science*, August 1954. For (d) see *Thesis*. In the equation of total demand for New Zealand's wool, instead of a rather meaningless world income variable, B. P. Philpott's index of activity in the world's wool textile industry was used. See his "Wool Textile Activity and Wool Prices," *Yorkshire Bulletin of Economic and Social Research*, February 1953. This index is basically an index of output, computed by combining periodic census of production data with man-hours-worked index, and adjusting the results by changes in productivity. Two comments on the use of this index are in order; first: to the extent that changing techniques improved the utilization of raw material, it deviates from an input index. Second: it is not an "explanation" of demand in the same sense that income is. It is here used as a proxy variable, which summarizes the real underlying causes that determine the world's demand for New Zealand's wool. In the equation $R^2 = 0.64$ and the correlation of the independent variables on each other is negligible.

- (b) British demand for New Zealand cheese:
 - Income elasticity of demand: $0.45 (\pm 0.23)$
 - Price elasticity of demand: $-0.19 (\pm 0.05)$ (Uninflated)
 - Competing price elasticity of demand: $-0.88 (\pm 0.10)$ (Deflated by price of Canadian cheese)
- (c) British demand for New Zealand lamb:
 - Income elasticity of demand: $1.48 (\pm 0.32)$
 - Price elasticity of demand: $-1.40 (\pm 0.34)$ (Deflated by British retail prices)
- (d) World demand for New Zealand wool:
 - "Activity" elasticity of demand: $1.54 (\pm 0.35)$
 - Price elasticity of demand: $-0.26 (\pm 0.09)$ (Uninflated)

The exports covered by these equations were, on the average, 75 per cent of total exports, for the period 1921-1938.

On the export supply side Dr. Bergstrom⁹ has found a negative price elasticity of -0.41 using a three-year lag and of -0.32 using a two-year lag for total exports. It seems reasonable to assume that a one-year lag would give a result close to zero.

Breaking down imports into consumption and non-consumption goods, two demand equations with close fits were obtained:¹⁰

- (a) For consumption goods:
 - Real disposable private income elasticity of demand: $1.12 (\pm 0.11)$
 - Real price elasticity of demand: $-1.05 (\pm 0.10)$ (Import prices deflated by New Zealand retail prices)
- (b) For non-consumption goods:
 - Real disposable private income elasticity of demand: $1.13 (\pm 0.16)$
 - Real price elasticity of demand: $-1.61 (\pm 0.09)$ (Wholesale price of imports deflated by domestic wholesale price index)

On the import supply side, the small size of New Zealand as a buyer in the world market makes it reasonable to assume that the supply of imports is perfectly elastic in a world of convertible currencies, and close to it even when sterling is inconvertible. The reasonableness of this assumption can be tested by observing the behavior of import prices in the years in which New Zealand devalued her currency. Only if supply is indeed elastic, will import prices move *proportionally* to devaluation (adjusting for autonomous changes in foreign prices). Now in 1931 the £ NZ depreciated by 10 per cent *vis a vis* sterling. This might have meant a corresponding increase in import prices. In fact, however, the uninflated import price *fell* by seven per cent that year. Now the world's price index of manufactures fell, at the same time, by 16.5 per cent.

⁹ A. R. Bergstrom, "New Zealand's Export Supply Function," *Economic Record*, June 1951.

¹⁰ *Thesis*. The reason for this breakdown was that the use of different price indices was felt to be preferable on theoretical grounds and also gave better fits. Both equations are on a per capita basis and have a 9 months lag between income and imports. They were tested by bunch map analysis (by Mr. T. W. Rowe) and for auto-regressivity, and found satisfactory.

Taking this latter change as the measure of autonomous foreign price changes,¹¹ the movement in import prices can be explained in the following manner: Foreign prices fell from 100 to 83.5, but the devaluation raised import prices by 10 per cent, or 8.4 points, raising the import price index in domestic currency to 93. Likewise, when in 1933 New Zealand's currency depreciated further to £ St. 100 = £ NZ 125, had foreign prices remained constant, New Zealand's import prices should have risen by 13.6 per cent on the assumption of perfectly elastic supply. Actually foreign prices fell by 11.1 per cent, so the import price index should have been 101 (since $100 - 11.1 = 88.9$ and 13.6% of $88.9 = 12.1$). Actually it was 102.3. While neither separately nor taken together, these two instances can be conclusive proof of the proposition that supply is elastic, they are compatible with it.

The variety of the demand elasticities found makes it impossible to assign unique and unambiguous values to the more general concepts of demand for exports and imports. Any weighting procedure would be somewhat arbitrary. Yet, as some judgment is necessary, the guess may be ventured that the "true" export elasticity of demand is somewhere in the neighborhood of unity, possibly below it but almost certainly not above it. Combined with the inelastic export supply this makes the conclusion seem reasonable that New Zealand is not, normally, capable of increasing her foreign exchange receipts by devaluing her currency and is not likely to decrease them either.

However, the values of the import parameters (weighted more heavily by the higher one, as non-consumption imports are a multiple of consumption goods imported), with an elasticity of demand above unity and one of supply close to infinity, make it very likely that devaluation will, *given stable incomes*, decrease expenditures of foreign exchange. If these two propositions are accepted, the New Zealand trade balance must be regarded as stable, *regardless of the size of the original imbalance*.¹²

As British income can, for obvious reasons, be regarded as outside the range of variables affected by New Zealand's exchange rate manipulations, the question remains of what the likely connection between domestic income and the exchange rate is. If the supply of exports is as inelastic as the above discussion makes it appear,¹³ devaluation, by keeping earnings of foreign currency constant, will mean a proportional increase in exporters' incomes calculated in domestic currency. This, presumably, will have the normal foreign trade multiplier¹⁴

¹¹ This is, of course, an oversimplification. New Zealand does not import only manufactured goods and the weights of her import index would not be the same, by countries, as those of the world index here used, namely that of A. Lewis, in "World Production, Prices and Trade," *The Manchester School of Economic and Social Studies*, May 1952.

¹² It should, however, be stressed that because of the computation procedures used these propositions can only apply to one year periods.

¹³ Added to the natural inelasticity of supply of agricultural products are institutional peculiarities some of which are touched upon in E. Lerdau, "British Demand for New Zealand's Exports," *Canadian Journal of Economics and Political Science*, August 1954. For a full discussion, see *Thesis*.

¹⁴ The foreign trade multiplier was not computed because the implications of the previous analysis are that it cannot be constant but rather must vary with the level of income. It is

impact on the demand for imports. A partly offsetting impact could be, of course, the lower real income produced by the adverse shift in the terms of trade accompanying devaluation.

III. EXCHANGE POLICY

A major problem facing economic policy makers in New Zealand¹⁵ is that of economic instability. The export demand equations above have shown how heavily foreign price, income and employment fluctuations act on New Zealand's industries. Add to this the fact that New Zealand derives a larger proportion of her national income from foreign trade than almost any other country, and it becomes apparent that a large part of any stabilization policy must be concerned with absorbing foreign induced fluctuations. During and after the war these were to some extent softened by the bulk purchase agreements. But the latter have now been abandoned and it may therefore be expected that the problem will become more pressing in the future.

Its exposure to foreign fluctuations and a strong tradition of industrial and agrarian populism have made the New Zealand electorate extremely conscious of the advantages of economic stability. It is true that in public debate the meaning of stability is seldom well-defined, that it shifts and reshifts from employment stability to income stability and from these to absolute or even relative price rigidity. Here it may be assumed however, that a rigid price structure is not a necessary aim (in the sense of pressures on the government being compellingly strong) nor a desirable one. It is assumed that at full employment the maximum real income for any level of foreign prices is achieved by free trade, and that at such levels stable prices are better than unstable ones.

In the past most efforts to stabilize have ended in protecting secondary industries on the mistaken assumption that the existence of these would lessen New Zealand's dependence on foreign trade. While this may have lowered the real income of the community it is unlikely to have achieved its purpose, as the dependence on raw materials of the thus sheltered industries may have created as many potential bottlenecks as were destroyed.¹⁶

a peculiarly misleading feature of some of the literature that it discusses and measures import propensities and elasticities as if both could be stable simultaneously regardless of their values. A case in point is Tse Chun Chang's *Cyclical Movements in the Balance of Payments* (Cambridge University Press, 1951). Elementary analysis will show that *only if the constant income elasticity of demand is equal to unity, will the marginal propensity to import be constant*. There is of course, no *a priori* reason to prefer the logarithmic formulation over the arithmetic one, but it should be clear that, once the former has been adopted because it has yielded a satisfactory fit, to assert the existence of a stable propensity is to negate the previous assertion of a stable elasticity, unless the value found for the latter happened to be 1. And the usefulness of unstable structural parameters is difficult to grasp.

¹⁵ While in principle the Reserve Bank may be supposed to be autonomous, it seems a fair statement to say that it is heavily under the influence of the Treasury, which is of course much more conscious of, and exposed to public (political) pressures. By "policy makers" here are meant the executive bodies of these two agencies.

¹⁶ The fact that productivity rose faster in manufacturing than in agriculture should not be taken as an indication that the latter "deserved" protection. See my "Changing Productivity in the New Zealand Economy," *Economic Journal*, May 1953.

If additional protection is to be dismissed, the problem of measures for economic stabilization at optimum income levels becomes all the more difficult. One obvious question is that of exchange control, which in practice has acted as a most effective instrument of protection since 1938. The possible magnitudes of private capital dislocations shown above make some form of control seem highly desirable, but the application of selective import licensing is an altogether different matter. It would seem essential to keep the questions of allocation of resources (protection) and of monetary policy apart. If exchange control is to be used to avoid "hot money" problems, it would therefore seem reasonable to limit it to capital items. An application for foreign exchange to the Reserve Bank should then be *automatically*¹⁷ granted if commodity purchases are involved, while the monetary authority should have the power to refuse it if the purpose of the transaction is of a different nature. Administratively this would be much easier to enforce than the complete system of controls in force until the recent past.

This suggestion, however, begs another general question involved in exchange control: that of its presumed necessity on the grounds of automatic over-importation. Is there reason to believe that at no rate of exchange the demand for foreign currency will equal supply of it under conditions of Hicksian stability?¹⁸ The answer was already given. Apart from capital movements no evidence of such instability was found; capital on the other hand would be subject to official control.

If capital movements are thus eliminated as a de-stabilizing factor, the setting within which exchange rate determination can take place must do justice to three major problems in New Zealand, all of which were pointed out above:

- (a) The impact of foreign fluctuations on exporters' incomes and thus on domestic expenditure and the demand for imports.
- (b) The dependence of the existing secondary industries on imported raw materials, semi-manufactured goods and capital equipment.
- (c) The desire for stable domestic price levels.

Whether to have freely-fluctuating or fixed exchange rates, or an intermediate system will in part depend on these three constraints. But it will also have to depend on broader considerations of overall goals.

IV. POLICY OBJECTIVES AND EXCHANGE RATE DETERMINATION

New Zealand is not a member of the International Monetary Fund and not bound therefore by its requirements. But both the likelihood and the desirability of joining the Fund are relevant questions of policy. On this it can safely be said that the aims of the Fund, stable exchange rates, high employment and free

¹⁷ By statute. A general justification for limiting the discretionary authority of the monetary authorities has been given, in a different context by H. Simons. See his "Rules versus Authority in Monetary Policy," *Journal of Political Economy*, February 1936. Much of his argument applies here too.

¹⁸ "In order that equilibrium is stable, it is necessary that a slight movement away from the equilibrium position should set up forces tending to restore equilibrium." I. R. Hicks, *Value and Capital*, 2nd ed. (Oxford), p. 62.

trade, are entirely consistent with New Zealand's interests, if they can be achieved together.¹⁹ Also, if these were achieved by the Fund, probably any country could gain special advantages from not joining and hence not being subject to the necessary rules. But if many countries acted accordingly, the ends themselves could certainly not be achieved and the expected individual advantages would not materialize.

For political reasons it seems out of the question that New Zealand, in the foreseeable future, will ratify the Bretton Woods Agreements.²⁰ But not joining the Fund formally does not preclude the possibility of adopting a market structure which would conform in intent to what the Fund would consider acceptable. As is well known, the Fund has pronounced in favor of single, fixed exchange rates, subject to occasional readjustments when "structural" disequilibrium exists.

Special problem (a) above might be solved by any fiscal policy which is capable of isolating exporters' incomes. Under fixed exchange rates, these incomes could, theoretically, be stabilized through special taxes and subsidies. This would of course be the equivalent of the changes in the exchange rate frowned upon by the Fund; it would involve changes in the *effective* rate at a constant *nominal* rate. This must be construed as lack of consistency on the part of the Fund's structure rather than as a sign of inherent difference between the two measures; by refusing (or being refused) jurisdiction over member countries' fiscal arrangements the Fund has abdicated control over their effective rates of exchange.

Because of special problem (b), domestic stability could hardly be attained without stabilizing import prices (which could also be achieved by elaborate taxes and subsidies, conforming to Fund rules). It is for this purpose that Professor Simkin has suggested adjusting the exchange rate to offset foreign changes in New Zealand's import prices.²¹ While long-term changes in the composition of imports would make complete rigidity in this index impossible (and undesirable), no great administrative difficulties appear in this proposal, except that of minimizing the administrative lag. This would involve a fluctuating exchange rate. But for other current items such a rate would be rather de-stabilizing and it would most likely encourage speculative evasion of the restrictions on capital movements. On all non-trade items the rate would therefore remain fixed.

Now multiple, fluctuating rates appear the opposite of the Fund's requirements. But this is partly deceptive. The Fund's strictures against multiple rates have been against multiple trade rates²² and only one rate would apply to com-

¹⁹ This question has been discussed, in a general manner in my "The Purposes of the International Monetary Fund," *Economic Record*, May 1953. The conclusion reached there was probably both over-pessimistic and over-simplified.

²⁰ The causes for this are obscure, deep-seated prejudices as far as monetary matters are concerned. Their most blatant symptom is the lasting influence of the Douglas Social Credit movement, which in the 1954 general election polled 11 per cent of the popular vote. This movement, as well as some other groups, see in Bretton Woods a sinister design of monopoly capitalism on New Zealand's wealth and liberty.

²¹ See f.n. 2.

²² More than one export and/or import rate. The main reason for the Fund's objection can only apply to these anyway, as it is on the grounds of efficiency in the allocation of resources. This is stated explicitly by E. M. Bernstein in his "Some Economic Aspects of

modity exports and imports in this scheme. The optimum allocation of resources would therefore not be interfered with by the dual exchange rates. And the flexibility aspect would, as was pointed out, conflict with the Fund's position more in appearance than in reality, since in any case no control over *effective* rates by the Fund exists.

Exporters' incomes in domestic currency in such a scheme are then exposed to an additional source of instability, namely, import prices. If domestic stabilization is to be feasible, these fluctuations must be ironed out. For this the use of industry stabilization funds, already well-known in New Zealand's wool industry, is advocated. These funds would be set up in boom years out of that part of export receipts which is considered excessive as far as its impact on the economy is concerned at the time. These frozen funds would be used, in bad years, to supplement the same exporters' incomes, so as to iron out their more spectacular fluctuations. Each major export industry would have its own fund, since each one would be considered legal owner of the proceeds of all its exports after taxes, but with the same type of deferred control as operates in corporations which build up reserves for dividends. No expropriation (taxation) or subsidy would be involved.

The funds would of course operate only when export and import prices move in opposite directions, since simultaneous proportional changes would leave exporters' incomes in domestic currency unaltered by virtue of the change in the exchange rate. But some of the funds would usually be operating, possibly even in opposite directions, since the prices of New Zealand's major exports seldom move in step.

The major operational problem involved is how to alter the payout ratio of the individual funds. The objectives here are: (a) to follow long run movements in the terms of trade so as to optimize the allocation of resources; (b) stabilization, and (c) the constraint that the funds must not reach zero.

On (a) the question may be raised if the inelastic supply of exports does not negate the assumption that the terms of trade do shift resources. However, no such negation is involved since from the welfare point of view, which is the relevant one when *optimal allocation* is discussed, it is the possibility of more income and/or more leisure that counts, rather than the choice between income and leisure.

The monetary authority would therefore be justified to alter the sums paid out in accordance with some cycle smoothing formula. Since they cannot be expected

Multiple Exchange Rates," *IMF Staff Papers*, September 1950. On page 236 Mr. Bernstein leaves the impression that here he is speaking for the Fund. This analysis is complementary to that of H. Ellis who, in "Exchange Control and Discrimination" (*AER*, 1947), shows that multiple rates may benefit "large" countries (specifically excluded by Mr. Bernstein) by improving their terms of trade. Even the proponents of multiple rates would not disagree with Mr. Bernstein's analytic proposition that "A simple . . . analysis will show that for a ('small') country . . . the maximum advantage from . . . trade will be ensured where the same rate of exchange is applied to both exports and imports." Thus Mr. E. R. Schlesinger, in his *Multiple Exchange Rates and Economic Development* (Princeton, 1952), makes his defense purely on non-static grounds to ensure growth rather than present maximization of real national product.

to forecast prices, a weighted average of past and present prices, such as that embodied in the Bauer-Paish formula,²³ could work satisfactorily. Again, once presented with such a formula, the authority's discretionary power would be minimized. It may incidentally be pointed out that the existence in New Zealand of Producer Boards, organized by industries and with a long record of government-industry co-determination, provides a useful pre-established structure for the administration of the stabilization funds.

V. CONCLUSION

The Simkin proposal was designed to ensure a certain amount of domestic stability for an economy very exposed to foreign fluctuations. This was to be done without depriving the country of the advantages from free foreign trade. The plan involved: (a) stabilizing import of prices in New Zealand currency by offsetting foreign price changes through exchange rate alterations, (b) keeping the exchange rate on non-commodity trade items stable, and (c) mitigating the effects of foreign fluctuations on exporters' incomes by means of industry stabilization funds.

It was shown here that the plan is viable in terms of the structural parameters relevant to New Zealand's foreign trade only if no free private capital movements are allowed. It was argued that if the latter are controlled (i.e., if exchange is sold freely to *bona fide* importers) the plan is both administratively feasible and economically desirable.

The latter was shown to be true because, in spite of some apparent contradictions with the letter of the International Monetary Fund's rules, it was found that no conflict of principle exists. An additional argument in favor of the plan, even when modified by the introduction of exchange control over capital items was found to be in the limits it sets on the power of the monetary authorities over the allocation of resources. While the plan would still have to rely on an efficient and incorruptible civil service, it does less so than the previous system of import controls. In any case, New Zealand seems to fulfill this requirement better than most countries.

It has been suggested above that the plan might also fit the needs of other countries. This would be true wherever the structural parameters behind the balance of payments are somewhat comparable to those of New Zealand. Only detailed empirical investigation can decide this from case to case. Probably New Zealand's demand for imports is somewhat more elastic than that of other dependent, but less developed, economies. But on the other hand the low price elasticity of demand for wool may make the total demand for New Zealand's exports lower than that of many of these other economies. And if their balance of trade is stable, the scheme might be found to be useful for very similar reasons as those discussed above.

²³ See the proposal by R. E. Bauer and F. W. Paish in "Fluctuations in Incomes of Primary Producers," *Economic Journal*, December 1952.

TECHNOLOGICAL PROGRESS AND MARKET STRUCTURE*

IRWIN M. STELZER

New York University

In recent years economists have increasingly stressed the rate of technological progress as a criterion of satisfactory economic performance. At the same time, they have come more and more to disagree on the relationship, if any, which exists between the market structure of an industry and the rate of technical advance characteristic of it. One group of economists seems to feel that an industry in which there is intense competition is quite likely to be characterized by a rapid rate of technical advance, while another feels that the large-scale industrial organization characteristic of markets of few sellers is the ideal instrument for inducing technical progress.¹

Those who hold that competition and technical advance go hand in hand point to the fact that it will not pay a businessman to introduce a new process in place of an old one unless it reduces the total unit cost of producing a commodity to a point below the variable cost per unit under the old process. This is because the substitution of the new technique for the old makes the investment in the old process worthless, with the possible exception of the scrap value of the obsolete equipment. While the monopolist is in a position to regulate the inflow of new capital so as not to impair the value of the old, the single competitor has no choice but to introduce the new technique if outsiders are free to enter the industry. Thus Domar writes:²

If the industry is characterized by intense (though by no means pure) competition, and other firms have already adopted the new machine or are likely to do so in the near future and thus possibly outsell our firm, then the loss sustained from scrapping its existing equipment becomes an accomplished fact. It is written off, and from then on our firm behaves as if it never owned the scrapped plant, as if it were a new firm just entering the industry.

Its opponents reply to this argument by noting, "It is tempting to raise the question of fact." The fact that one of the first steps taken by a large corporation is to establish a research department staffed with men acutely aware that their

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¹ Evsey D. Domar, "Investment, Losses and Monopoly," Chap. II, Lloyd A. Meltzer, *Income, Employment, and Public Policy: Essays in Honor of Alvin H. Hansen* (New York: W. W. Norton and Co., 1948); George W. Stocking and Myron W. Watkins, *Monopoly and Free Enterprise* (New York: Twentieth Century Fund, 1951) pp. 11-12; cf. Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper and Brothers, 1947) pp. 104 ff.; John K. Galbraith, *American Capitalism: The Concept of Countervailing Power* (Boston: Houghton Mifflin Company, 1952).

² Domar, *op. cit.*, p. 36.

bread and butter depends on their success in devising improvements "does not obviously suggest aversion to technological progress."³ Further, and in direct answer to the theoretical argument advanced above, it is maintained that (especially when demand is rising) *potential* competition supplies the monopolist with an added impetus over and above that arising from the cost-saving expectation,⁴ and that overhead costs often result in the failure of firms promptly to adopt improvements even if entry is free.⁵

There is still another area of disagreement regarding the relationship of market structure to technical change. Domar and others seem to feel that to a firm commanding only a small part of the total market the introduction of a new machine is a particularly attractive way of underselling other firms and capturing their markets. This is because the loss sustained from scrapping old equipment would be negligible compared with the profits which could be expected from conquering a larger share of the market. For a firm which already possesses a sizable part of the total market for that product, on the other hand, there isn't very much left to conquer, and the loss from scrapping bulks large. This argument is usually met with the counter-claim that a firm which does not have a substantial share of the market has no strong incentive to undertake a large expenditure on development. The innovating competitive firm, it is felt, would soon find its developments copied by imitators who have not shared in the costs of research, i.e., it would very quickly be restored to a plane of equality with its competitors. Galbraith concludes:⁶ "Thus the very mechanism which assures the quick spread of any known technology in the purely competitive market—and which was a strong recommendation of that market—eliminates the incentive to technical development itself."

A further arrow in the quiver of those who feel that large-scale semi-monopolistic firms are the only ones which can profitably conduct modern research is the increased evidence of the changing nature of industrial technology. It has come to be generally accepted that, "Technology has become so vast and so complex that the individual is more than ever dwarfed in relation to it."⁷ The day in which Yankee ingenuity turned loose in a moderately equipped tool shop could produce significant advances is past; future progress is more likely to be the result of cooperative effort in an expensive laboratory staffed with men versed in electronics, aerodynamics, chemistry and nuclear physics. The increased complexity of industrial research and development not only requires greater resources be-

³ Schumpeter, *op. cit.*, p. 96.

⁴ Carl Kaysen, "A Dynamic Aspect of the Monopoly Problem," *Review of Economics and Statistics*, May 1949, XXXI, p. 111.

⁵ William Fellner, "The Influence of Market Structure on Technological Progress," *Quarterly Journal of Economics*, November 1951, LXV, p. 566.

⁶ Galbraith, *op. cit.*, p. 92. Suffice it to say at this point that this statement obviously ignores (a) the fact that the pressure to imitate innovation by a single firm would be much greater under conditions of oligopoly, where the single firm bulks large and impairs the competitive position of others, than under pure competition, where the single innovation may have little effect; and (b) the possibility of patent protection.

⁷ Alfred E. Kahn, "Deficiencies of American Patent Law," *American Economic Review*, September 1940, XXX, p. 481. See also Vannevar Bush, *Science: The Endless Frontier* (Washington: Government Printing Office, 1945).

cause of the increased outlay which it makes necessary, but also because it must be on a sufficient scale to allow successes and the inevitable failures to average out to some extent.

The question remains, of course, as to whether the resources required for modern research are so great as to necessitate the existence of *substantial* monopoly power and profits. Thus, even an acceptance of the arguments concerning the changing nature of modern technology and the need for protection against immediate imitation does not eliminate the problem—What degree of monopoly should be permitted?

It is hoped that a study of the pattern and extent of technical change in the cotton textile industry will shed some light on the issues discussed above. This industry lends itself to this study both because it is one whose market structure has been accepted by most as approaching the competitive ideal and because large integrated units have recently begun to appear in it. It thus provides us with an opportunity to study (a) technical change under conditions of pure competition, and (b) the effect of the appearance of large-scale industrial organizations on the rate and nature of technical advance.

A problem which immediately presents itself concerns the method to be used in measuring technical change. Nearly all of the possible measures possess some weaknesses. Thus there are three objections to using the number of patents issued as a measure of technical advance. First, it must be remembered that fundamental research does not usually lead to patentable inventions. Irving Langmuir's work on the high-vacuum tube, for example, was held to be the discovery of a fundamental natural law, and therefore not eligible for patent protection. Second, many companies and industries (e.g., chemicals) are patent minded, employing large legal staffs to obtain patents on every minor development. Other firms and industries may emphasize research and technical progress just as much, but like the automobile industry, apply for far fewer patents. Finally, a simple tallying of the number of patents implies that all are of equal importance, an obvious untruth.

Another suggested measure of an industry's rate of technical advance is the number of research workers it employs. Although this measure errs in equating Nobel Prize winners and laboratory assistants, it does give some idea of the "research consciousness" of a firm or industry, and does evidence the extent to which different firms and industries are willing to go in their desire to uncover new processes and products. A very similar measure—also imperfect—is the volume of research expenditures. Although expenditures do not necessarily insure results, they are a necessary prerequisite to such results, and, like the number of research workers employed, do provide some indication of the dimensions of a firm's propensity to achieve technical advances.

A final measure of technical change which has often been mentioned is the rate of change in the ratio of output to input. Although objections to this measure have been raised,⁸ it seems fairly safe to say that any trend in output per man

⁸ See for example Ansley J. Coale, "The Measurement of Changes in Productive Processes," paper presented to Conference on Quantitative Description of Technological Change, April 6-8, 1951, pp. 27 ff. (mimeographed). Coale points out that to measure output at

hour reflects principally the effects of the continuous changes in industrial techniques on the amount of labor required per unit of output. This does not mean that factors other than technological change have no influence on output per man hour. Changes in the degree of plant capacity utilization, changes in average plant size, changes in product mix, and changes in the educational status of the working force are only a few of the non-technological factors which may affect output per man hour. There is no reason to believe, however, that these factors are more important in one industry than in another, a fact which reduces their significance in a comparative study.

Furthermore, we are fortunately here concerned with relatively long time periods, that is, the output per man hour data presented below will be used primarily to compare the rate of change of input to output in one industry—cotton textiles—with the rate of change of input to output in all manufacturing over an extended period of time. This eliminates an important objection often made against using output per man hour figures as a measure of technical progress—that in many industries output fluctuates more widely than employment because contractual, technical, or other reasons prevent the entrepreneur from making proportionate changes in his labor force.⁹

Since the best long-term data available relate to this last measure—output per man hour—we shall begin our discussion with a consideration of the rate of change of output per man hour in cotton textiles and in other leading industries. The lack of long-term series on the number of research workers and on research expenditures forces us to use what data are available concerning those items as supplements to our man-hour output data.

Table I contains data for output per man hour in cotton textiles and in a sample of 59 manufacturing industries for the years 1919–1936. The data indicate that during the period covered output per man hour in cotton goods manufacture increased by 56 per cent, while output per man hour in all industries surveyed rose 80 per cent. Only 10 of the 59 industries in the sample showed smaller percentage increases than did cotton goods, and output per man hour in the silk and rayon goods industry increased by 143 per cent.

These data would seem to reflect a tendency on the part of the cotton textile industry to lag behind others in uncovering and introducing new and improved equipment and techniques. This observation has been borne out by several students of the industry. One found that between World War I and 1934 (the date of his study) changes in technique had been rare in the industry, a majority of the mills studied having made no labor-saving changes in 15 years, and the balance having made only minor changes. Further, horsepower per wage earner increased

constant prices—a necessary procedure if this measure is to be employed—we must assume a homogeneous product over time. This assumption he considers particularly invalid when what is being measured is technical change itself. Study reveals, however, that in the case of cotton textiles the assumption of product homogeneity over time is not a particularly invalid one.

⁹ Stigler notes that the decline of 16.7 per cent in output per man hour in the automobile industry between 1929–1931 cannot be taken to mean that more primitive techniques were used in the latter year. See his *Trends in Output and Employment* (New York: National Bureau of Economic Research, 1947), p. 46.

TABLE I
OUTPUT PER MAN HOUR, COTTON GOODS AND 59 MANUFACTURING INDUSTRIES, 1919-1936
1929 = 100

Year	Cotton Goods ^a	Manufacturing ^b Industries
1919	85.0	69.1
1920	89.6	72.0
1921	82.9	77.2
1922	95.0	80.1
1923	95.0	82.8
1924	95.3	85.6
1925	96.3	89.3
1926	91.9	91.9
1927	89.0	93.2
1928	95.7	97.2
1929	100.0	100.0
1930	96.7	101.1
1931	94.0	106.3
1932	102.7	107.7
1933	109.1	113.5
1934	113.5	113.6
1935	122.1	122.4
1936	132.6	123.9

^a Mills engaged primarily in any of the processes preparatory to spinning, or in the actual spinning, of cotton yarn, and in the weaving of cotton piece goods over 12 inches in width.

^b These 59 industries employed more than one-half of all manufacturing wage earners and accounted for more than one-half of the value of manufactured products in 1936. Indices of physical production were computed for each industry, and combined by the compilers into a 59 industry average with the use of man-hour weights.

Source: United States Works Progress Administration, National Research Project, *Production, Employment and Productivity in 59 Manufacturing Industries*. Part I, "Purpose, Methods, and Summary of Findings," p. 67; Part II, "Indexes For Individual Industries and Methods of Construction," p. 64. (Philadelphia, 1939).

only 20 per cent in cotton textiles during the 1920's, while for all industries the increase was 50 per cent.¹⁰

Table I also indicates that after 1931 the rate of increase in output per man hour in textiles was well above that for all industries combined. However, the significance of this data is somewhat diminished both by the fact that it covers a relatively short time period, and the fact that most of the increase in man-hour output between 1931 and 1936 was probably due to the 50 per cent increase in utilization of capacity. Further information made available to the author by the Textile Workers Union of America indicates that in the nine years subsequent to 1936 output per man hour in the cotton textile industry actually declined.¹¹

The quantitative data presented above can be profitably supplemented by a more qualitative discussion of the more important advances which have occurred

¹⁰ Harry Jerome, *Mechanization in Industry* (New York: National Bureau of Economic Research, 1934), pp. 80-81, 257.

¹¹ These findings are available in typescript in the union's New York City offices.

in the cotton textile industry in the late 19th century and in the 20th century.¹² For purposes of convenience and clarity, our discussion will fall into five areas: (1) preparatory processes: opening, carding, combing, and drawing; (2) spinning; (3) spooling, warping and sizing; (4) weaving; and (5) converting and finishing.

(1) The preparatory processes are designed to loosen the matted cotton of the bale, remove the impurities and shorter fibers, straighten and lay parallel the fibers retained, and draw them out into finer and finer thread of even weight. The machinery used at present in opening, carding, combing and drawing was all in wide use by 1860, and changes since that date have consisted in merely improving existing types of equipment. Further, most of these improvements have been passed on to American cotton manufacturers from England and France. A few examples demonstrate that what little advance there has been in the various preparatory processes since the late 19th century has consisted of improving existing equipment. Carding machines have not been significantly improved since 1910;¹³ since 1860 no change has been made in the drawing-frame except to improve its construction; and the greatest contribution to opening and picking was the feed-regulator, developed in 1862.¹⁴

(2) In the spinning process the fibers of cotton are firmly twisted together to form yarn, the twist providing added strength and converting the cotton into a firm, compact thread. There are two types of spinning machines—the mule and the ring-frame. The ring-frame, invented in this country in 1831, led to considerable cost-savings, and improvements in this machine were rapid. By the late 1870's however, the speed of these ring-frames had been increased to an average of 10,000 revolutions per minute, a speed not since surpassed. Improvements in spinning since that date, although not completely without importance, have been relatively minor.¹⁵

(3) The yarn designed for use in "filling" (weft or crosswise threads) passes directly from the spinning process to the weaving department. Warp threads, however, must still undergo several processing operations before reaching the weaving stage. The first of these is spooling, which consists of winding the cotton yarn from a large number of small spinning bobbins into a large package. This operation, performed on either a spooler or an automatic winding machine, eliminates the necessity of constantly replenishing the supply of small bobbins on the warper.

The most important improvement in spooling came in the 1870's, when the wire bobbin holder was developed. "This holder has since been modified some-

¹² The 18th century inventions of Kay, Wyatt, Paul, Hargreaves, Arkwright, Crompton and Cartwright have been so thoroughly described that nothing further need be said here about them. See Paul Mantoux, *The Industrial Revolution in the Eighteenth Century* (London: Jonathan Cape, 1929), Part II, Chapters I and II; Abbott Payson Usher, *A History of Mechanical Inventions* (New York: McGraw-Hill Book Company, 1929), Chapter IX.

¹³ Boris Stern, "Mechanical Changes in the Cotton Textile Industry, 1910 to 1936," *Monthly Labor Review*, August 1937, 45, p. 326.

¹⁴ Melvin T. Copeland, *The Cotton Manufacturing Industry of the United States* (Cambridge: Harvard University Press, 1912), pp. 58, 62.

¹⁵ *Ibid.*, p. 67; Stern, *op. cit.*, p. 13.

what, but only in detail."¹⁶ Another important improvement in spooling was the Barber knotter, invented in 1900. After that invention, advances in spooling operations consisted of developing improved (not new) machinery capable of operating at higher speeds. The same may be said of warping and sizing machinery, the present type of beam warper having been invented and put in use well before the Civil War, and the old dressing process for sizing the warp yarn having been superseded by the slasher in 1866.

(4) Weaving begins after the threads have been arranged in proper order, the ends tied in, and the warp beam placed in the loom. The modern loom performs a function similar to that of the most primitive looms, which is essentially the crossing or interlacing of one set of threads with another. The important advances in weaving have been the development of the Draper-Northrop automatic loom (1894), the Crompton-Wyman loom for weaving gingham (1905), and the Barber Warp-Tying machine (1904). All served to reduce labor costs, and all were fairly rapidly adopted.

(5) There are a great variety of machines for converting and finishing cotton cloth, as it may be bleached, printed, dyed, or mercerized after being woven. The methods of bleaching have undergone few changes during the last 100 years, and no new types of printing machinery have appeared in the past 75 years. Although dyeing has been advanced considerably, developments in this field have come, not from the cotton textile, but from the dyestuffs industry.

This qualitative description of the pattern of change in the industry supplements the more quantitative material presented earlier, and allows us to conclude that technical progress in cotton textiles, although not non-existent, was not rapid. One author has summed up the situation with the following statement:¹⁷

The textile industry has been unique . . . in that the fundamental characteristics of its manufacturing processes were stabilized years ago. . . . No basic changes in processes or machinery has taken place since the invention of the Draper loom about 1900. Such improvements as had occurred were largely in the form of refinements in existing machinery which could be made use of either by special machine attachments or by rebuilding the machinery.

Not only has progress been moderate, but what advances there have been have taken the form of improvements in processes rather than in the development of new processes or products. It was not until the oligopolistic rayon and chemical industries made their appearance on the textile scene that *new* textile fibers came into being. In other words, technical change in the cotton textile industry was such that its primary influence was to increase output of a given product. This would seem to bear out the theoretical analysis of the relation of market structure to the type of innovation which has been advanced by Oscar Lange.¹⁸ He points out that in an industry operating under the conditions of perfect competition

¹⁶ Copeland, *op. cit.*, p. 74.

¹⁷ Stephen Jay Kennedy, *Profits and Losses in Cotton Textiles* (New York: Harper and Brothers, 1936), p. 161.

¹⁸ Oscar Lange, "A Note on Innovations," American Economic Association, *Readings in the Theory of Income Distribution* (Philadelphia: The Blakiston Company, 1949), pp. 190-191.

and free entry the increase in the discounted value of the effective profit (defined as expected profit minus the risk premium) which an innovation induces attracts new firms into the industry. This influx continues until the industry's output increases sufficiently to reduce the effective profit of the firms to zero. In the case of the oligopolistic industry, on the other hand, innovations are not likely to be of the output-increasing variety. If they are faced with a kinked demand curve, oligopolists will also be confronted with a discontinuous marginal revenue curve. Within the range of this discontinuity output and price will not respond to shifts in the marginal cost curve. This, Lange believes, means that an innovation cannot be output-increasing under oligopoly "unless the diminution of marginal cost caused by it is sufficiently great to induce the firm to break the 'discipline' of the group."¹⁹ In other words, oligopolistic firms will only adopt an output-increasing innovation if it reduces marginal cost to so great an extent that it moves out of the range of discontinuity of the marginal revenue curve. Lange's analysis, then, leads us to believe that in an industry characterized by an oligopolistic market structure a firm will devote its inventive efforts to the development of new products, rather than to reducing costs (or increasing output per unit of input) of producing old products. This tendency of oligopolies to concentrate their research efforts on the development of new products is, of course, apparent in industries such as automobiles, electronics, and chemicals.²⁰

A further characteristic of technical change in the cotton textile industry (in addition to its moderate rate and process-improving nature) is that as a general rule, new developments have stemmed, not from the textile manufacturing industry, but from the oligopolistic textile machinery industry.²¹ The machinery companies have, in fact, repeatedly complained that the mills are content to leave the job of research to the machinery manufacturer.²²

There would seem to be three possible explanations of the relatively slow rate of technical progress which has characterized the cotton textile industry:

1. The relatively slow rate of increase in output per man hour since 1919 may be due to the fact that cotton textiles, being an old industry, had by that date already gone through its period of rapid improvement.
2. The inherent technology of this industry may be such that there is little room for improvement.
3. The competitive structure of the industry may be inconsistent with rapid technical change.

¹⁹ *Ibid.*, p. 194.

²⁰ See W. Rupert MacLaurin, *Invention and Innovation in the Radio Industry* (New York: The Macmillan Company, 1949); Alfred E. Kahn, "The Chemical Industry," Chap. VI, Walter Adams, *The Structure of American Industry* (New York: The Macmillan Company, 1954). Oligopolistic industries which have failed to develop "really" new products attempt to compensate for this with *imaginary* product differentiation. See Stocking and Watkins, *op. cit.*, Chapter 10.

²¹ For a long list of examples see Thomas R. Navin, *The Whittin Machine Works Since 1831* (Cambridge: Harvard University Press, 1950); George Sweet Gibb, *The Sacco-Lowell Shops* (Cambridge: Harvard University Press, 1950).

²² *America's Textile Reporter*, October 1, 1953, LXVII.

Let us consider each of these possibilities in turn.

(1) To attribute the relatively slow rate of technical advance of the cotton textile industry to its age involves the assumption that inherent in any industry there is an absolute potential for change, and that the cotton textile industry has exhausted these potentialities. There seems little reason to believe, however, that there is anything inherent in an industry's technology which makes a declining rate of increase inevitable. For a declining rate of growth to be inevitable, for example, we would have to assume also that the basic conditions of growth (in this case growth of technology) are not subject to disturbing influences that may significantly alter the course of growth,²³ an assumption few would care to make. Further support for the contention that it is not the industry's age which accounts for the slow rate of increase in man hour output comes from the fact that during the 1919-1936 period output per man hour in the boot and shoe industry—one of the few older than cotton textiles—increased by 21 per cent more than it did in cotton textiles.

(2) Attempts to explain the relatively slow progress of the cotton textile industry in terms of inherent characteristics of the material with which it works are weakened considerably by the development of new textiles in recent years. Fibers such as rayon, nylon, dacron, orlon and all the other so-called "miracle fibers" have been the products of the laboratories of firms outside of the cotton textile industry itself. It is true, of course, that these new fibers are essentially chemical products, but they are nevertheless *textile* fibers. Their chemical nature does not seem to provide a complete and satisfactory explanation for the total failure of cotton firms to so much as think along the lines of new fiber development, thinking which might have led to the use of outside research organizations well versed in chemical technology. As a matter of fact, the cotton textile industry has traditionally done very little work in fiber research, and improvements in the quality of cotton fibers have been the result of the work of the Department of Agriculture. This is in marked contrast to the rayon branch of the textile industry. During the latter part of the thirties rayon manufacturers steadily laid the basis for expansion of rayon in relation to the total fiber market. The tensile strength of rayon was increased, thus increasing its launderability. Techniques for producing rayon soft in texture and dull in sheen were developed, and the fabric's ability to take dyes was greatly improved. In 1937 high-tenacity and semi-high-tenacity yarns were developed for various industrial uses.²⁴ These developments brought about an expansion of the possible uses of rayon, and by 1948 cotton fibers made available to ultimate consumers constituted 68.3 per cent of total fiber consumption, compared with an average

²³ For a discussion of the assumptions of the above theory of growth see Joseph J. Spengler, "Theories of Socio-Economic Growth," *Problems in the Study of Economic Growth* (New York: National Bureau of Economic Research, 1949), pp. 57-62 (mimeographed).

²⁴ Cyril O'Donnell, "Recent Trends in the Demand for American Cotton," *Journal of Business of the University of Chicago* (January 1945 supplement) XVIII, pp. 52-53; Jesse W. Markham, *Competition in the Rayon Industry* (Cambridge: Harvard University Press, 1952), p. 215.

of 78.7 per cent in the 1935-1939 period and 83.1 per cent in the 1925-1929 period. Rayon, on the other hand, rose from 0.3 per cent of the total fiber market in the latter 1920's to 8.3 per cent in the latter thirties, and to 17.5 per cent in 1948, making its greatest gains in the manufacture of tire casings. Whereas cotton comprised 99.7 per cent of all fabrics used in these casings in 1937, by 1950 only 30 per cent of tire fabric was cotton. This shift can be attributed to the development of a strong viscose filament rayon fiber, and might have been halted or at least lessened had cotton manufacturers done more intensive work in such areas as improving the adhesion of cotton tire cord to rubber and synthetic rubber, and investigating the relationship of cotton tire properties and the construction of the cord to its "flex life" and tensile strength. That the neglect of such lines of research was a more important factor in cotton's loss of the tire market than were the inherent characteristics of cotton is shown by the fact that the Department of Agriculture has recently conducted field tests which have shown that its newly developed cotton tire cords "consistently and materially outperform commercial cotton tire cords."²⁵

(3) It would seem that the relative lack of technical advance in the cotton textile industry is due to the industry's market structure. Cotton textile manufacturers have rarely been possessed of the above-normal profits which are evidently required for research. Note that this indicates that research expenditures are considered by most mill-men to be a "frill," or a species of charity to be financed out of profits, rather than a necessary cost of doing business. In this attitude the textile industry is not alone. Even in research-conscious industries such as chemicals and electronics, manufacturers feel that research expenditures "come out of profit margins," and do not hesitate to curtail such expenses when margins fall.²⁶ It is not surprising, therefore, that in 1940 a sample of cotton manufacturers spent only .0017 of each sales dollar on research and development. In recent years, i.e., since the growth of larger integrated units and the return of profitability to the industry, expenditures on research have increased to .12 of each sales dollar.²⁷ That this increase has been due as much to the appearance of the larger units as to the return of profits is indicated by the fact that of the 738 research engineers and scientists employed by the textile mill products and apparel industries in January 1952, 660 (89 per cent) were in the employ of firms with more than 1000 employees, and 422 (57 per cent) were with firms employing more than 5000 persons. Further, between January 1951 and January 1952 firms with fewer than 500 employees reduced their research staffs by 14.0 per cent, while firms with 500-4,999 employees added to them by 2.9 per cent, and firms with over 5000 employees increased their research per-

²⁵ Edgar H. Omohundro, et al., *Domestic Cotton Surplus Disposal Programs* (Washington: Department of Agriculture, December 1954), p. 50.

²⁶ Interviews with several executives of leading chemical companies. See also Arthur Bright, *The Electric Lamp Industry* (New York: The Macmillan Company, 1949), in which he refers to the fluctuating research budgets of General Electric and Westinghouse.

²⁷ House of Representatives, *Study of Agricultural and Economic Problems of the Cotton Belt*, Hearings before the Special Subcommittee on Cotton of the Committee on Agriculture, 80th Congress, 1st. Session, 1947, p. 147. Hereinafter House Cotton Study.

sonnel by 4.5 per cent.²⁸ This research activity by the larger firms has led them to adopt air-conditioning to eliminate temperature changes and thereby facilitate quality control; to install electronic controls on slashers and in finishing plants; to adopt mechanical conveyors and material handling equipment; and to develop new finishes and fiber blends.²⁹ Nevertheless, it is obvious that despite their research expenditures these large firms have contented themselves with discovering ways in which the developments of other industries could be successfully applied to textiles. Improved air-conditioning equipment and electronic controls are not products of textile research laboratories; nor are mechanical conveying devices. Even the development of new fiber blends simply represents the use of different combinations of fibers supplied by the chemical industry. This situation does, however, represent some improvement over pre-World War II days.

The experience of the cotton textile industry, therefore, sheds some light on the more general problem of the relationship of market structure to technological progress. The emphasis on research activity by the larger firms—possessed of the funds and of the knowledge that they will be in business for a rather long time—does indicate that present attitudes toward research expenditures require the existence of above-normal profits as a prerequisite to the financing of research on any appreciable scale. This does not mean, of course, that maximum progress will be achieved by concentration of market control and research effort in the hands of a very few large firms. The present situation in cotton textiles—large firms with funds for research, and the competition of smaller but vigorous competitors to keep them alert and forward looking—may perhaps turn out to be the most conducive to rapid advance.

²⁸ United States Bureau of Labor Statistics in cooperation with Department of Defense, *Scientific Research and Development in American Industry* (Washington: Government Printing Office, 1953), p. 62.

²⁹ House Cotton Study, p. 159; Solomon Barkin, "The Regional Significance of the Integration Movement in the Southern Textile Industry," *Southern Economic Journal*, April 1949, XV, pp. 402-403; Jesse W. Markham, "Vertical Integration in the Textile Industry," *Harvard Business Review*, January 1950, XXVIII, p. 85.

THE MULTIPLIER TIME PERIOD AND THE INCOME VELOCITY OF ACTIVE MONEY

WILLIAM L. MILLER

Alabama Polytechnic Institute

I

Some economists, notably Mr. Fritz Machlup, Mr. Richard M. Goodwin, Mr. James W. Angell, and Mrs. Vera Lutz, have maintained that the multiplier time period is determined by the magnitude of the income velocity of active money.¹ Others, especially Mr. Paul A. Samuelson and Mr. Gardner Ackley, have argued that such is not the case.²

The most important source for the dispute has been that the multiplier has been differently defined. For purposes of this paper there have been two concepts of the multiplier. Mr. Angell and Mrs. Lutz have concerned themselves primarily with a multiplier defined in terms of monetary flows.³ They imply the existence of a corresponding multiplier accounting for the flow of goods and services. Those with a different conception of the multiplier are in two camps. Mr. Machlup and Mr. Goodwin have defined the multiplier in terms of the flow of goods and services, but the goods and services represented are those whose movement has been made possible by the flow of money originating at one point.⁴ Another group has followed the lead of John M. Keynes, who defined the multiplier in terms of the flow of goods and services but who did not specify whether the money moving this flow is to be injected at one or more

¹ James W. Angell, *Investment and Business Cycles* (New York: McGraw-Hill Book Company, 1941), pp. 187-210; Richard M. Goodwin, "The Multiplier," *The New Economics* (New York: Alfred A. Knopf, 1947), ed. by S. E. Harris, pp. 487-493; Vera Lutz, "Multiplier and Velocity Analysis: A Marriage," *Economica*, N. S., 1955, XXII, pp. 29-44; Fritz Machlup, "Period Analysis and Multiplier Theory," *The Quarterly Journal of Economics*, 1939, LIV, pp. 1-27, reprinted in *Readings in Business Cycle Theory* (Philadelphia: The Blakiston Company, 1944), pp. 203-234. Subsequent references to Machlup's article will be to the reprint.

² Gardner Ackley, "The Multiplier Time Period: Money, Inventories, and Flexibility," *The American Economic Review*, 1951, XLI, pp. 350-355; Paul A. Samuelson, "Fiscal Policy and Income Determination," *The Quarterly Journal of Economics*, 1941-1942, LVI, p. 602.

³ Mr. Angell's thinking is oriented toward explaining income generation in terms of monetary flows. It is not surprising that as a refinement of his basic analysis, he translates the approach to income generation by means of the quantity of active money and its income velocity into multiplier terms. It is not misleading to say that he defines a multiplier in terms of monetary flows. His multiplier is the reciprocal of the marginal propensity to hoard, and hoarding is generally defined in monetary terms. Parts IV and V of the Lutz article listed in fn. 1 are a defense and a refinement of Angell's analysis.

⁴ By defining the multiplier in terms of the marginal propensity to consume, Mr. Machlup follows a practice favored by those who think of the multiplier in terms of the flow of goods and services. He makes it clear that he appeals to the concept of the income velocity of active money only in an effort to determine the time dimension of the multiplier. (See Machlup, *op. cit.*, especially p. 220, fn. 1.) In his model Mr. Machlup will not permit the realization of a term of the multiplier until active money has completed a cycle from the consumers

points.⁴ The dispute has been complicated by the failure of the parties concerned to make clear that they are speaking of multipliers differently conceived. In fact, some of them have implied that their opponents really do have the same multiplier in mind as they.⁵

This paper is not an attempt to evaluate the comparative merits of the approach to income generation by use of the quantity of active money and its income velocity. It does try to answer two questions: (1) Can the time period of a multiplier defined in terms of monetary flows be determined by use of the income velocity of active money? (2) Can the time period of a multiplier defined in terms of the flow of goods and services be ascertained by use of the income velocity of active money? Problems introduced by changes in the price level will not be dealt with, and a closed economy will be assumed.

II

This section deals with the relationship between the income velocity of active money and the multiplier concept defined in terms of monetary flows. As mentioned beforehand, this type of multiplier has been described and used by Mr. Angell and Mrs. Lutz. If s denotes the marginal propensity to spend for consumption and investment, the marginal propensity to hoard is denoted by $1 - s$. Let $1 - s$ be indicated by h . The hoarding denoted by h need not leave a hoard in the hands of individuals or non-banking business firms but may simply re-

through retailers, wholesalers, manufacturers, and back to the consumers again. (*Ibid.*, pp. 216-226).

That Mr. Goodwin wishes to think primarily in terms of the flow of goods and services is indicated by the following: (1) He defines the multiplier in terms of the flow of goods and services—a procedure not favored by those strongly oriented toward monetary flows (*op. cit.*, p. 483); (2) he speaks of the multiplier in terms of consumption and investment (*ibid.*, p. 485); (3) he regards himself as borrowing the concept of income velocity from monetary theory (*ibid.*, pp. 487-488), whereas Angell borrows the multiplier concept and applies it to monetary flows.

⁴ Keynes had a strong dislike for the concept of income velocity and defined the multiplier in terms of flows of investment and consumption. (See his *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace and Company, 1936), especially pp. 115, 194-195, 299.)

Mr. Ackley is clearly speaking of the multiplier in terms of the flow of goods and services. (See especially pp. 352-353 of the article cited in fn. 2.) Section III of this paper is a refinement of Ackley's contribution.

⁵ Mr. Angell seems to argue that, had Keynes' thinking advanced, he would have stated the multiplier in terms of monetary flows. It is difficult to nail down this charge by citation to specific pages in Angell's *Investment and Business Cycles* because this position appears to underlie Angell's thinking throughout Chapters IX, X, and XI. Angell implies again and again that his thinking is simply the maturation of that of Keynes.

Mrs. Lutz clearly recognizes that there are multipliers defined in terms of the flow of goods and services and those set forth in terms of the flow of money. (See pp. 30-31 of her article cited in fn. 1.) She does not make it clear, however, that the time period of velocity analysis does not apply to the two types of multipliers in the same way.

Mr. Ackley, who thinks of the multiplier from the standpoint of the flow of goods and services, does not make it clear that some of his opponents are speaking with monetary flows primarily in mind.

duce the amount of money held by the public as in the retirement of debts to the money-creating banks or may result in the passage of money into financial circulation.⁷

A multiplier k_1 is defined by $1/h$, which is equal to $1/1 - s$. Also,

$$k_1 = 1 + s + s^2 + s^3 + s^4 + s^5 + s^6 + \dots + s^n.$$

This multiplier shows that one monetary unit injected as active money results in the flow of spending indicated by this progression. If the marginal propensity to spend is .9, the sum of the terms of the series will approach 10 as a limit. The injected monetary unit will eventually result in the clearing of accounts valued at 10 times its worth.

The marginal propensity to spend is so defined that this progression also represents a flow of goods and services. Though the orientation is from the side of the flow of money, the flow of active money is conceived to be opposed by an equal flow of goods and services.

Since k_1 is defined in terms of the flow of active money, the rate at which successive terms of k_1 are realized is determined by the rate of flow of the active money involved.⁸ A measure of the average rate of this flow is the ratio of the multiplier limit, which in the case described in the preceding paragraph is 10, divided by the average amount of active money associated with the realization of k_1 . If successive terms of k_1 are realized in periods of equal length, the amount of active money involved on the average is simply $(1 + s + s^2 + s^3 + \dots + s^n)/N$, where N represents the number of periods. For example, when k_1 is 10, the average amount of active money needed for the realization of the first three terms is $(1 + .9 + .81)/3$, or .90 1/3. During this period required for the attainment of the first three terms, the velocity ratio, which indicates the income velocity, is $2.71/.90$ 1/3, or 3, which indicates that one term will be realized in 1/3 the time required to obtain three.⁹ If the rate of the flow of money varies from one term to the next, appropriate weighting must, of course, be used in computing the average.

If the income velocity of active money, or more exactly that of an increment of active money, can be used to determine the time span between the realization of one term of k_1 and the succeeding term, can the period of time required for the realization of the entire multiplier progression be determined by use of this measure of velocity? Obviously, when the marginal propensity to spend is unity, the period required for the attainment of k_1 cannot be determined by use of this velocity ratio, for this multiplier is infinite. Theoretically, even when s is below unity, k_1 is still the summation of an infinite series. From this standpoint, the time period necessary for the realization of k_1 is without end. The

⁷ See James W. Angell, *op. cit.*, pp. 35, 166.

⁸ Active money includes monetary balances for which individuals and institutions have definite plans to spend in some way other than in financial circulation.

⁹ If active money is indicated by M , its income velocity by C , and the national income by Y , then the average income velocity of the entire stock of active money is denoted as follows: $C = Y/M$. The time period required for an average unit of active money to have an income velocity of 1 is the fraction of the time equal to the reciprocal of C . This time period is sometimes called an income period.

general conclusion is that the income velocity determines only the time period required for the accomplishment of a truncated k_1 .

What has been gained by the statement of the multiplier in terms of monetary flows? The effect on the quantity of active money and on income of a continued injection of a given size per time period can be found by the same summation procedure as is commonly used in connection with multipliers.¹⁰ When this process is employed in connection with k_1 , the amount of active money in circulation and the amount of income generated in a given time period are presented as functions of income velocity and of marginal propensities to spend and to hoard. In this way the approach to income generation by use of the concepts of active money and its income velocity is presented in terms of the multiplier theory. The introduction of the multiplier concept does not amount to a fundamental change in this approach, which has the same virtues and defects that it formerly had. This approach will account for all flows of goods and services involving monetary flows, but the investigation of the relative merits of this type of analysis of income generation is not the purpose of this paper.

III

Following the example set by John M. Keynes in his *General Theory*, some economists define the multiplier in terms of the flow of goods and services. Generally these economists define the multiplier as the reciprocal of the marginal propensity to save, though it is entirely possible to state the multiplier in terms of monetary flows and set it forth in terms of the marginal propensity to save. If k_2 denotes the multiplier in terms of the flow of goods and services, if s indicates the marginal propensity to save, and c signifies the marginal propensity to consume,

$$k_2 = 1/s = 1/1 - c = 1 + c + c^2 + c^3 + c^4 + \dots + c^n.$$

If the economists represented by Mr. Angell and Mrs. Lutz borrow the multiplier concept for the purpose of refining their approach to income generation by way of monetary flows, some economists like Mr. Machlup and Mr. Goodwin start out with the multiplier conceived in terms of the flow of goods and services and call in the income velocity of active money in an effort to measure the time dimension of this flow. Mr. Machlup is very explicit in his exposition.¹¹

The attainment of the initiating term (1) of k_2 is accompanied by the injection of an equivalent amount of active money. The next term cannot, according to Machlup and Goodwin's viewpoint, be had until the unsaved part (c) of the initial injection of active money has travelled from the consumer through the retailers, the wholesalers, the manufacturers, and so on and back again to the consumers. The third term (c^2) cannot be realized until active money in the amount of c^2 , derived from the initial injection of unity, has described a similar

¹⁰ For early demonstrations of this process, see Fritz Machlup, *op. cit.*, p. 224, and Paul A. Samuelson, "Interactions between the Multiplier Analysis and the Principle of Acceleration," *The Review of Economic Statistics*, reprinted in *Readings in Business Cycle Theory* (Philadelphia: The Blakiston Company, 1944), p. 266.

¹¹ Fritz Machlup, *op. cit.*, pp. 216-226.

cycle. For this model, it is correctly concluded that the time span between the accomplishment of one term and that of its successor is rigidly set by the income velocity of active money associated with this multiplier.

Machlup's model, which is followed also by Goodwin, is needlessly rigid. Other economists define the multiplier in the manner of k_2 and insist that the realization of a truncated k_2 does not depend solely upon the magnitude of the income velocity of active money. Monetary theorists long ago provided them with the foundation for their position when they announced that the flow of goods and services depends on the quantity of active money and its income velocity and not on one alone.

Is it, for example, necessary that k_2 be attained at a faster rate in an economy in which the income velocity of active money is high than in one in which the income velocity of active money is lower? That such is not the case can be easily demonstrated. Let it be assumed that in one economy six terms of k_2 are realized in one month and the flow of money is such that all accounts are cleared during the final week of this period. Now let it be imagined that there is another economy in which six terms of k_2 are attained in one month but in which accounts are cleared during the final week of each second month. For a given income twice as much money will be needed in the second as in the first, but the income velocity of active money in the latter model will be only one-half that in the first. Multipliers defined in terms of the flow of goods and services are attained as quickly in one as in the other. What is accomplished in the first by the higher income velocity is brought about by a larger amount of active money in the second.

In a given economy in which the arrangements for the clearing of accounts are such that the income velocity of active money is constant, the speed with which a truncated k_2 is attained need not be limited at all by the fixity of this income velocity. Log jams caused by the constancy of the income velocity of active money can be broken by the injection of more active money. Suppose that the income velocity of active money is such that, without additions to the quantity of active money, one year is required for the realization of five terms of a representative k_2 . Thus, in a year the following are had: $1 + c + c^2 + c^3 + c^4$. If monetary factors alone are limiting and if the quantity of active money is readily augmentable, all five terms or even more can be got as quickly as the people wish by simultaneously injecting active money at numerous points. Those who wish to buy the initiating amount of unity (the first term) are to be provided through the money-creating institutions with one unit of money. At the same time the purchasers of c of consumer goods can be furnished this amount of money, the buyers of c^2 consumer goods can be supplied with a sum of money equal to c^2 , and so on. All purchases can be made in short order. A representative k_2 can be brought to fruition by initiating one or many k_1 's.

The general point is that the flow of goods and services is made possible in a money-using economy by the quantity of active money and its income velocity. If the quantity of active money or its income velocity can be increased to accommodate an increasing flow of goods and services, this flow need not be limited by monetary factors.

IV

Those who have disagreed on the question of the possibility of using the income velocity of active money to determine the time period of the multiplier have all been correct. To make this statement is to declare that in the final analysis there has been no disagreement or that there should not have been. Those who define the multiplier in terms of monetary flows are right when they maintain that the time period required for the attainment of a truncated multiplier of their type is determined by the income velocity of active money alone. Those who define the multiplier in terms of the flow of goods and services are also correct when they argue that the time required for the accomplishment of a truncated multiplier of their type need not depend on the income velocity of active money alone but may depend on both the quantity of active money and its income velocity. Each side in the dispute has nothing to lose by admitting that the flow of goods and services need not be limited by monetary factors.

COMMUNICATION

A NOTE ON THE DEFINITION OF A COMMODITY

The definition of a commodity plays an important role in economic theory. The concepts of an industry and of industrial market structures (monopoly, competition, etc.) are dependent on such a definition.¹ Such analytical tools are precise and useful only to the extent that a definition of a commodity is precise and useful. Unfortunately, it is probably impossible to devise a unique, unambiguous definition that would be applicable to every empirical situation.

This by no means justifies the rejection of the commodity concept (or the dependent market classification). Businessmen think in terms of belonging to an "industry" that produces a "commodity," and these thoughts influence their pricing and production practices. If economic theory is to reflect (and be of use in predicting) the behavior of firms, it must give the concept of a commodity an appropriate place in the analysis. Furthermore, this concept is crucial to welfare and policy implications of economic theory. Without it, price theory becomes little more than an intellectual exercise.

The most popular definition of an industry (and by implication, of a commodity) is in terms of cross elasticities of demand among various firms. If the products of a group of firms are interrelated by high cross elasticities of demand, and have low cross elasticities with other goods, the group of firms is said to comprise an industry. This definition requires an arbitrary delineation and is nonreversible when the firms are of substantially different size.

An alternative definition may be derived from indifference analysis. If a commodity is homogeneous, consumers do not distinguish between the products of the firms comprising the industry. Let x and y represent two such products. The indifference map of a typical consumer for product x and product y would be composed of straight lines in the form of y equals a constant minus x , since the slope of the line (the marginal rate of substitution) is minus one. In this case the marginal rate of substitution is the same regardless of the stock of x or y in the consumer's possession, and is also the same for all consumers. Thus, for a homogeneous commodity, the first derivative of every consumer's indifference curve will be minus one and the second derivative will be zero. The latter characteristic suggests a basis for classifying commodities. We shall define the substitution flexibility for an individual as the relative change in the individual's marginal rate of substitution divided by the relative change in the stock of one of the products, say x . The second derivative of a consumer's indifference curve is equivalent to this definition of the substitution flexibility, so that this measure will be zero when the individual's indifference map is composed of straight lines. If the average of the substitution flexibilities for all consumers of x and y

¹ An industry is defined as the group of firms producing a commodity. The output of each firm is called a product, and a commodity is composed of a group of products.

in a given market is zero, then the firms producing x and y are said to belong to the same industry.²

This definition loses none of its preciseness or usefulness when applied to an important category of non-homogeneous or differentiated commodities. The consumer will generally prefer a specific brand of a differentiated commodity (that is, a specific product), and preferences will vary among consumers. If the differentiated products fulfill the same wants, the consumer is likely to purchase only the product he prefers, rather than some combination of such products. It is quite common to buy a carton of cigarettes, a case of soft drinks, a tank of gasoline, a dozen golf balls or bars of soap, etc., of the same respective brands. This would seem to be sound empirical evidence that the consumers' indifference curves between the various brands of such commodities are straight lines. This conclusion is augmented by consumer reaction to changes in the relative prices of such products. A consumer may resist a mild relative rise in the price of the preferred product, and continue to buy it exclusively. If the rise continues, however, he will switch to the cheaper substitute, and purchase it exclusively.

The hypothesis of straight line indifference curves is not necessarily disproved should the consumer buy a combination of differentiated products. If the ratios of the prices of the products are the same as the associated (constant) marginal rates of substitution, the consumer will be indifferent as to the composition of a certain stock of the commodity.³ The combination of the products that he buys could be a matter of random chance. The hypothesis would be vindicated if a change in the products' price ratios resulted in his shifting exclusively to the relatively cheaper product. This same explanation could apply to the consumer who shifts from one brand to another over time. An alternative interpretation, in this case, would be that his tastes have changed with the passage of time.

Thus while the first derivatives of the indifference curves may vary among consumers (reflecting preferences), the hypothesis indicates that the second derivative will still be zero for many differentiated products. Therefore, the average substitution flexibility will be zero, and a group of such products may be classified as a commodity with the same confidence as in the case of homogeneous products.

² The substitution flexibility measure is the reciprocal of Weintraub's elasticity of substitution. See S. Weintraub, *Price Theory* (New York: Pitman Publishing Corporation, 1949), p. 67. Weintraub defines the elasticity of substitution as the relative change in the quantity of x divided by the product of the relative change in quantity of y and the relative change in the marginal rate of substitution. If x and y are perfect substitutes this measure would be infinite, so it is not appropriate for our purposes if the arithmetic mean is used as an average. The mean elasticity of substitution for two dissimilar products would be infinite provided only one (perhaps irrational) consumer felt that they were perfect substitutes. However, if the mode is used as a measure of central tendency, the elasticity of substitution would serve as well as the substitution flexibility. The mode of either of these variables would have the advantage of not being influenced by irrational behavior (for example, a cook who makes a point of buying a combination of brown and white eggs when New Yorkers and Bostonians are invited for breakfast). The disadvantages are: (1) it would permit too

It should be noted that the practice of varying the scope of the industry according to the requirements of a particular problem can be logically justified in terms of this definition, provided the classification is made on the basis of consumer groups. For example, most institutional buyers of automobiles act as if their indifference maps between various makes were composed of straight lines. However, the slopes of the lines would vary from buyer to buyer according to differences in preferences, so that one company might buy a fleet of Fords, another a fleet of Chevrolets, etc. Also, the family that is limited to one car may be assumed to have straight line indifference curves because of the indivisibility of the product. From the standpoint of these groups we should include all the automobile firms in the same industry. However, the potential and actual two or more car families usually prefer a combination of makes or models. This indicates convex indifference curves and justifies classifications such as the "Plymouth industry" or the "convertible industry."

It is hoped that this definition retains all of the precision of the "homogeneous product" definition of a commodity, while gaining some of the usefulness and applicability of the cross-elasticity definition.

Pennsylvania State University

LAWRENCE E. FOURAKER

much latitude unless some arbitrary limitation were placed on allowable dispersion; (2) the mode (for samples of consumer behavior) is not as reliable as the mean in the use of statistical inference.

* If the consumer desires variety in the purchase of multiple units of a differentiated commodity, this analysis is not applicable. Indifference curves between different brands of furniture, clothing, breakfast cereal, automobiles, etc., might be straight lines if the consumer contemplated the purchase of only one unit. If he considered more than one unit, the indifference curves would probably be convex.

BOOK REVIEWS

The Failures of Economics: A Diagnostic Study. By Sidney Schoeffler. Cambridge, Mass.: Harvard University Press, 1955. Pp. xiii, 254. \$4.75.

The failures of economics, according to Schoeffler, stem from the fact that economists are unable to make reliable business forecasts. The *raison d'être* of economics is, in fact, to forecast, and remarkably little progress has been made in this direction. "Economists could not predict the future course of economic events in the early days of the discipline, and they cannot predict the future course of events today" (p. 3). The situation is all the more embarrassing since during the last 175 years, while economics has been largely marking time, physiology, physics, chemistry, genetics, mathematics, medical science, astronomy, and many other disciplines "have been radically transformed during that period—sometimes several times—and have greatly enlarged their scope of understanding and their power of accomplishment" (p. 2).

What accounts for the failures—failure (?)—of economics? A number of excuses are frequently offered by economists: (1) The economic world is inordinately complex. When the physical scientist is confronted with analogously complex situations, he is equally helpless, e.g., meteorology. (2) Economists, in common with all social scientists, are unable to conduct controlled experiments, and this puts them at a serious disadvantage as compared with the physical scientists. (3) Economists, again in common with other social scientists, must deal with the behavior of beings who are governed by their own noncaused "will," and this frustrates efforts to predict human behavior. (4) It is sometimes stated that the entire universe is basically indeterministic rather than deterministic, and there must be an uncertainty concerning the flow of events in our world, and economics is "almost constantly concerned with the future, where the general indeterminacy is always the greatest" (p. 10). (5) Social forecasts are in their nature often self-defeating. The very act of arriving at and acting upon a prediction may so alter the course of events in the economic system that the economic forecast will, because of that alone, turn out to be false. (6) The economist, being an interested part of the system he studies, often finds it difficult to use an open-minded, neutral, and scientific approach. (7) Many economists, curious fellows such as the neo-classical economists, believe that neither the resources nor the ends are to be explained by the economist, but he must confine his study to the institutions and processes through which people adapt their limited resources to the multitude of conflicting ends. "The good neoclassicist deliberately refuses to pay attention to the most important links in the chain of causation through which the present exercises its influence on the future. It is not surprising, therefore, that he is not a successful forecaster and policy maker, whatever his other accomplishments may be" (p. 12). (8) It has been argued by some that economics, by virtue of its necessary incompleteness, cannot in the nature of things provide a theoretical science of economic dynamics. (9) Because of the complexity of the economic system, economists, if they are to make any

progress at all, must resort to over-simplification and the process of gradual approximation. To date this process has not gone very far, but we have made some progress and in the right direction.

This is a formidable list of obstacles, and the author concedes that "there is little doubt that these explanations, especially when taken together, do account in large measure for the relative backwardness and ineffectiveness of modern economics" (p. 15). But this is not the whole story. Recognizing that he may be over-stating his case, Schoeffler contends that the failures of economics do not stem from the nature of the subject matter, but the ineffectiveness of modern economics is the fault of the economists themselves—"The progress of economics has been and is so painfully slow because the concepts, the analytical tools, and the investigative tools employed by economists have been and are basically incompatible with the subject matter that economists study" (p. 17). Rather than devising tools and techniques suitable for the materials on which he works, the economist has chosen to borrow and modify tools which were invented for quite different purposes, and the consequences have been completely unsatisfactory. Economists "have taken their mathematics and their deductive techniques from physics, their statistics from genetics and agronomy, their systems of classification from taxonomy and chemistry, their model-construction techniques from astronomy and mechanics, and their methods of analysis of the consequences of action from engineering. But the subject matter of economics unfortunately is quite different from that of any of these other sciences Unavoidably, therefore, predictions about economic reality which are produced with the aid of these techniques are quite undependable, and professional economics has been and continues to be a relatively ineffectual debating society" (pp. 40-41).

The general reader is not likely to go beyond this point. He is by this time convinced that the economists have clearly made a mess of things. But for the more hardy souls there are two chapters of case studies. Here certain works of several economists, including some very familiar names, are shown to be characterized by fundamental methodological weaknesses and, consequently, unsatisfactory as the basis for reliable predictions. These cases are discussed under the following headings: (a) empirical statistical investigations, (b) micromodels, (c) semirigorous forecasting techniques, (d) macro-economic models, and (e) story-telling, i.e., "literary" or non-mathematical economic analysis. These chapters are not only intellectually stimulating, but they are also likely to stimulate one's adrenals and one's risibilities. If one has any pet peeves, e.g., institutional economics, econometrics, price theory, the National Bureau of Economic Research, input-output analysis, or the work of F. A. Hayek, he surely will find them rent asunder here. But, alas, one's own notions of the proper approach to economics will be dealt with no less harshly.

By this time considerable suspense has been built up. If all tacks taken by economists to date have been ineffective, if not futile, what is the true word? The reader is likely at this point to grow a bit uncomfortable since he is obviously approaching the end of the book, and all of his idols have been demolished, and no new gods appear to be at hand to replace them. One reads the

chapter called "Conclusions" without finding a map to the promised land. In fact, one reads that "economics is not a nomothetic, empirical science. Moreover, this is not only true of economics as it has been practiced so far, but it appears to be true as well of whatever can be done along economic lines in the future. . . . Economic systems are essentially open systems. It is this essential openness that prevents us from discovering empirical laws within the system itself" (pp. 155-156).

But there is a ray of hope. There are two areas of investigation which should be pursued with vigor: (a) general decision theory and (b) economic policy-making. With reference to the first: "There was a slow start in the seventeenth and eighteenth centuries, when the theory of probability began to be created, but most of whatever work has been done in this field took place in the last fifty years, and especially in the last twenty. We are referring now to such developments as the theories of statistical decision pioneered by Neyman, Pearson, and Wald, the theory of games pioneered by von Neumann, the entire 'new' welfare economics, the modern techniques of 'programming' and operations research, and the entire school of modern logic" (p. 159). "The second branch of the art of economics, which I have called economic policy-making, is concerned with a more concrete and specific matter than is general decision-making. It would work on appropriate methods of solution of what are customarily called 'economic problems,' governmental or private. It is thus closely akin to medicine in its approach and method, differing from the older discipline only in its concrete field of application." The author promises to present a more satisfactory formulation of the concepts outlined in his final chapter on "Prediction in Economics" in a forthcoming book on prediction and decision theory. Judging from the sample included here, one supposes that the decision theory will depend heavily on the work being done in the field of symbolic logic.

The reader is likely to feel that the concluding chapters of Schoeffler's book represent something of an anti-climax. At least until more work is done along the lines suggested by the author, the proposals for redirecting the course of economic investigations remain something less than convincing. It seems not unreasonable to believe that even if economics draws upon the natural sciences and the social sciences such as psychology, sociology, and anthropology for its factual information, upon the systems of modern symbolic logic for its analytical methods, and upon general decision theory for its policy-making, as Schoeffler recommends, economists will still be attempting to predict the unpredictable.

But perhaps the author has painted the picture in too sombre tones. A part of the trouble is a matter of semantics. It is axiomatic to say that the purpose of a theory is to predict. But this is not to say that economics must be capable of economic forecasting. It may well be true that the bulk of economists are either (a) indifferent with respect to the problem of business forecasting and concern themselves with other matters which they consider important, or (b) they believe that business forecasting is impossible and efforts in that direction rate the same respect as methods of divining the outcome of a horse race or crystal-ball gazing in general, or (c) guessing the trends of business activity is an in-

interesting game to be engaged in for sport but not to be considered a part of the professional competence of the economist. On the other hand, the businessman, in the nature of things, is required to make forecasts and base his decisions on his estimates of future business activity. He no doubt would be happy to shift this responsibility to an economist if he believed that the economist had mastered the techniques of the prophet, and unquestionably business concerns have hired economists for the express purpose of making business forecasts, and unfortunately a number of economists have claimed to be able to foretell movements in business indexes. But guessing the future remains the responsibility of the businessman. It is not a serious indictment of economics to say that it has failed to do what it has not attempted to do and claims no special competence to do. Perhaps there should be and possibly there could be a science of business forecasting. But many present-day economists would have no interest in joining such a group if it were formed. These, one supposes, Schoeffler would classify as members of the Futility School of economists.

Prediction, as opposed to forecasting, is commonplace in economic theory. One may say, for example, that if the supply curve is horizontal and stable and demand increases, price will remain stable. This constitutes a prediction. And this is the easy part of the job. If one begins with the observation that price has remained stable, he cannot conclude that the supply curve is horizontal; numerous other explanations could equally well be advanced. In many areas of economics reliable predictions can be made, but the economist is never likely to be able to forecast the price of wheat in Chicago six months in advance. And the survival of the private enterprise economy probably requires that he remain largely impotent as a prophet.

Alfred Marshall, commenting on Comte's attack on Mill, observed the general rule that in discussions of method and scope a man is nearly sure to be right when affirming the usefulness of his own procedures and wrong when denying that of others. Judged by this standard, Schoeffler's book is mostly wrong. But this is an analysis based on a prediction by a member of the Futility School of economics. After reading the book one is reluctant to criticize it lest his evaluation be based upon an improper scientific method.

A. and M. College of Texas

CLARK LEE ALLEN

The Alphabet of Economic Science. By Philip H. Wicksteed. New York: Kelley & Millman, 1955. Pp. xiii, 142. \$4.50.

In this little book brought out in 1888 Wicksteed restated and argued through the principles of utility and exchange which Jevons had set forth seventeen years earlier in his *Theory of Political Economy*. As Wicksteed put it, his aim was "to bring Economics down from the clouds." To make it possible for the ordinary student to follow discussions of marginal utility Wicksteed presents a very careful and elementary discussion of the concept of a derivative. By frequent example the reader is led on to the point where the connection between total utility and marginal utility is shown to be that of a function and its derivative with respect to quantity.

Wicksteed grasped rather clearly the problem of measuring utility. In effect, he proposed to circumvent the necessity for measuring utility by expressing the satisfaction derived from one thing by the equivalent satisfaction expressed in a second commodity. Labor power and gold were the two commodities which were to be used to express equivalent satisfactions. When Wicksteed drew a total utility curve with (say) clothes plotted along the horizontal axis and units of gold along the vertical axis, it seems apparent that an indifference curve between gold and clothes in the fourth quadrant was being represented. His marginal utility curve is the marginal rate of substitution of gold for clothes along an indifference curve.

As he works through his discussion of exchange and production, along Jevonian lines, Wicksteed makes many penetrating comments. In particular, he stresses the point that the desire of two people for a commodity may be the same when expressed in money, but that the money itself "may mean to the two men things separated by a hell wide chasm" (p. 76). Pursuant to this thought Wicksteed explains why the equalization of marginal utilities of goods relative to money achieved by different individuals through exchange cannot be said to imply a social optimum.

From the viewpoint of today's reader perhaps the most unsatisfactory aspect of the discussion is the way in which discussion jumps from exchange conditions between individuals to the market demand curve for the commodity. Furthermore, it is evident from the context that Wicksteed took this market demand curve to be the sum of the individual "marginal utility" curves (representing the marginal rates of substitution of money for the good). Individual demand curves, drawn up on the assumption that total utility is constant, differ in quantity demanded from the conventional demand curve; the difference is equal to the income effect and can be neglected only on the assumption that income effects can be neglected or that the marginal utility of money is constant along the indifference curve. In this respect, Marshall's proviso about the constancy of the marginal utility of money represents an advance over Wicksteed. However, the resources of modern theory are necessary to sort out the deficiencies in the analysis of the demand curve. Considered in the context in which he wrote, Wicksteed's treatment of utility and exchange is modern in spirit and worth reviewing.

University of Alabama

JOHN S. HENDERSON

Foundations of Productivity Analysis: Guides to Economic Theory and Managerial Control. By Bela Gold. Pittsburgh, Pa.: University of Pittsburgh Press, 1955. Pp. xi, 303, \$5.00.

Writing in the early "thirties," Lionel Robbins sharply delineated the spheres of activity of the economist and of the technician or engineer (*Essay on the Nature and Significance of Economic Science*, London, 1932). According to Professor Robbins, these spheres are mutually exclusive, the results obtained by the latter are simply data for economists. Since that time, however, an increasing number of economists have ignored traditional discipline frontiers and have

worked toward a merger of economic theory and statistics with managerial science. In the volume under review, Professor Gold joins this latter group. Indeed, at the outset Gold states that development of more effective guides to the theoretical analysis and managerial control of productivity adjustments is the primary purpose of his study.

To accomplish this objective, Gold constructs a "new" analytical model of production founded on the observation that "changes in physical output per man-hour may be attributed to changes in the proportions in which labor and fixed capital are combined and to changes in the productivity of fixed capital" (p. 67). To implement this concept, a basic formula is suggested:

$$\frac{\text{Physical Output}}{\text{Man-Hours}} = \frac{\text{Fixed Investment}}{\text{Man-Hours}} \times \frac{\text{Physical Output}}{\text{Fixed Investment}}$$

This formula may be modified and elaborated by the introduction of additional ratios that cancel appropriately.

But it is immediately recognized that this model is nothing more than an aggregative expression of the conventional production function, in which the ratio of output to labor input replaces marginal considerations. Furthermore, the transition is not made without sacrifice. In the first place, broad factor classification must be used, whereas in actual investigations, much more detailed classification is desirable. Secondly, the model is not amenable to incremental analysis, either in the form of finite differences or by the differential calculus.

Gold employs his model to study innovation. Historical data are used to determine the appropriate ratios (as defined by the model). Then in consideration of these ratios and of managerial objectives, a "guide to practical decision-making" is obtained. That is, some notion of a historical production function is obtained. On the basis of this, a decision is reached regarding alternative innovations according as management prefers labor- or capital-conserving changes. Perhaps such information as is furnished by historical production functions is useful to management, but the essence of innovation is that the production function itself changes. Thus for innovations of any consequence, it seems that the Gold model is an inaccurate guide.

This volume is undoubtedly a contribution to empirical investigation on the firm level. However, for several reasons, it leaves much to be desired in an analytical model. In the first place, the factor classification necessitated is too broad for profitable use in specific firm studies. Secondly, the model itself has theoretical defects. Finally, extrapolation from historical production functions is of doubtful validity.

University of North Carolina

C. E. FERGUSON

The Federal Antitrust Policy: Origination of an American Tradition. By Hans B. Thorelli. Baltimore, Md.: The Johns Hopkins Press, 1955. Pp. xvi, 658. \$8.00.

Our federal antitrust policy has been of sufficient continuing national importance to stimulate many American scholars to investigate its origins; it has been sufficiently unique among national economic policies to lead scholars of

other nations to investigate them. Mr. Thorelli's book reflects the intimacy with his subject he obtained from extended study in the United States and the thoroughness and detachment of a Swedish national. The result, in Mr. Thorelli's own words "... lays no claim to the final word ..." I applaud his modesty but disagree with his assessment: a lawyer, economist, and political scientist by training, Mr. Thorelli has produced here such a complete documentation of the origins of antitrust that he leaves very little room for additional words on the subject.

Slightly less than one-third of the book is concerned with the common law, economic, social, constitutional and political background of the Sherman Act. Here Mr. Thorelli's mastery of the materials of all the social sciences is especially evident. The United States, he finds, had from its inception been guided by the philosophy of free competitive enterprise, and most of what was later expressed explicitly in the Sherman Act had long been a matter of common law. That the common law never attained the status of a federal policy was largely attributable to the failure of concentration of economic power to reach the proportions of a major public problem before the civil war, and to the lack of coordinated and aggressive public prosecution.

Seventy-five pages are concerned with Congressional reaction to trust formation, which culminated in the passage of the Sherman Act in 1890. Contrary to the findings of J. D. Clark¹ the Act did not arise out of public apathy; contrary to Oswald W. Knauth² it was not in response to an indignant, outraged and frenzied press. It was simply a popular Act that clearly reflected the public will, especially the will of the South and West. Congress' overwhelming approval affirmed the democratic process—the Senate passed the bill by a vote of 52 to 1, the House, after two conferences, by a vote of 242 to 0, with 85 abstentions. Significantly, although the American Economic Association had been formed in 1885 out of reaction against dogmatic laissez faire and naturalistic evolutionism, throughout the lengthy hearings not a single economist was called upon to testify. And, judging from their published views on the trust problem which had appeared prior to 1890, no economist is on record as having favored prohibitory legislation such as the Sherman Act.

Current prevailing opinion notwithstanding, the Act, though not its final wording, appropriately bears the name of Senator John Sherman. Since the publication of his *Autobiography* in 1903 students of antitrust have inferred from the following passage that Senator Hoar was the author of the Act: "In 1890 a bill was passed which was called the Sherman Act, for no other reason that I can think of except that Mr. Sherman had nothing to do with framing it whatever."³ This inference, says Mr. Thorelli, should have been laid to rest in 1910 when the first materials disproving Hoar's authorship were published.

The remainder of the book is an intimate chronological account of the forces

¹ *The Federal Trust Policy* (Baltimore, Md.: The Johns Hopkins Press, 1931).

² *The Policy of the United States Towards Industrial Monopoly* (New York: Columbia University Press, 1914).

³ George F. Hoar, *Autobiography of Seventy Years*, vol. 2 (1903), p. 363.

that gave our federal antitrust policy concrete form. A confluence of events and circumstances leads Mr. Thorelli to attach special significance to the year 1903: (1) It marked the end of a six-year period of frenzied trust formation. That it ended refuted the Social Darwinism that had held monopoly to be inevitable because it was efficient; the way it ended (the "rich men's panic") belied the glittering promises of the speculators and promoters who had put the trusts together. (2) For the first time a President (Theodore Roosevelt) took a personal hand in the application of the Sherman Act. (3) Congress gave special funds to the newly created Antitrust Division of the Department of Justice, passed the Expediting Act, and created the Bureau of Corporations. The Supreme Court's decision in the *Northern Securities* case in 1904 can appropriately be viewed as the crowning symbol of these developments, but the developments themselves represented the first major milestone in antitrust and institutionalized our federal antitrust policy.

I hesitate to rub even a little of the sparkle from the gem of scholarship Mr. Thorelli has given us, especially when the limitations of space prevent according him all the plaudits his book richly deserves. Here and there he appears to view the Sherman Act as a positive program for maintaining and nurturing competition. It is in fact considerably less than this. He explains the timing of the Sherman Act in terms of the rising concentration from 1870 to 1890, and suggests that prior to 1870 monopoly and trade restraints were not a public problem. I believe, but cannot prove, that both were as much in evidence before 1870 by realistic market definitions but, since they were local in character, they were—when dealt with at all—dealt with locally. He does not treat the field of banking and therefore omits much documentation of the public's traditional distrust of concentration of economic power in public as well as private hands. One would have expected in this connection at least a passing reference to President Andrew Jackson and the Second United States Bank. Finally, the length of the book and the steady stream of documentation make considerable repetition unavoidable. But these at most are minor flaws.

Mr. Thorelli has developed his subject with unusual thoroughness and competence. His book will unquestionably become a standard reference on antitrust for economists, political scientists, historians and lawyers. Regrettably—but understandably—Mr. Thorelli did not carry his analysis beyond 1903. I concur with Corwin Edwards who, in writing the Foreword, expressed the hope that Mr. Thorelli would sooner or later give us a companion volume on the later development of the antitrust laws. He has proven himself eminently qualified to perform the task.

Princeton University

JESSE W. MARKHAM

Regulating Business by Independent Commission. By Marver H. Bernstein. Princeton, N. J.: Princeton University Press, 1955. Pp. xii, 306. \$5.00.

In this interesting and timely book the author's objective is: "(1) to evaluate critically the role of the independent regulatory commissions, (2) to develop a more realistic concept of the process of government regulation, and (3) to appraise the independent commission as an agent of government regulation at the

national level" (p. 7). As independent regulatory commissions at the national level Bernstein includes the ICC, CAB, FPC, FCC, FTC, SEC, and the NLRB. He offers no systematic analysis of the performance of any of these agencies, but treats "the independent commission" in general terms, drawing upon some of the experiences of a few of them as illustrations of the inadequacies of this type of organization.

The author concludes that the commission form has not justified its presumed advantages. He says: "Commissions appear to have no unique qualities which enable their staffs to rise above the general level of competence in government agencies. While commissions exercise broad discretion in regulatory matters, the devices and institutions available for maintaining their political accountability are unsatisfactory. Consequently, their wide scope of discretion is not controlled by firm lines of responsibility" (p. 295). His "more realistic concept of the process of government regulation" is centered around the idea of the desirability of placing regulatory agencies under presidential control in order to achieve "the integration of regulatory policy into the total content of government economic policy" (p. 292). The public interest can be identified, he maintains, only by effective coordination of regulatory programs. He says that the finding of the Hoover Commission's Task Force on Regulatory Commissions to the effect that no serious problem of coordination exists "merely illustrates the planlessness of the economy and the general disorder of which the independence of regulatory commissions is merely a part" (p. 163).

By equating planlessness with disorder Bernstein seems to ignore the fact that in our economy the basic means of social control of economic activity is not "regulation" by the legislative or executive branches of the government, but the maintenance of a legal framework—based on property and contract—which makes possible the utilization of the market mechanism as the *primary* means of achieving the public interest. Although in Chapter 8 entitled "Enforcement of Regulations" he acknowledges that the FTC enforces statutes rather than issuing regulations, he views the "judicial approach" of independent commissions as a means of providing "a calm setting for the regulatory process" (p. 178) which "may make regulation more secure in the sense that its survival is conditioned upon reaching a workable agreement with the regulated parties" (p. 179). A part of the function which each of these seven commissions perform—particularly the Federal Trade Commission—is to supplement the courts in continuously defining the legal framework within which decisions are made by private firms. Bernstein loses sight of this aspect of their function. At no point does he consider the independent commissions as alternatives to the district courts, but only as alternatives to executive agencies.

Although Bernstein appears to merely advocate the replacement of the independent commissions with agencies under direct control of the president, he seems to be implicitly advocating a much more fundamental change in the basic policy of the United States with respect to the organization and control of economic activity. The case presented for such a major change in policy is unconvincing to this reviewer.

Washington University

DAVID D. MARTIN

Price Discrimination in Selling Gas and Electricity. By Ralph Kirby Davidson. Baltimore, Md.: Johns Hopkins Press, 1955. Pp. 254, ix. \$4.00.

The reviewer finds some difficulty doing full justice to Professor Davidson's book in the space allotted despite the fact that as a doctoral dissertation it presumably represents the author's first venture into a difficult, troublesome field. The book can be read with profit by the many interested in micro-economic analysis despite its specialized and technical nature. The thesis is provocative, the implications are significant and the handling of difficult subject matter presents a most illuminating example of the problems involved in reconciling theory with practice.

More than half the book is given to the critical analysis of existing rate-making theories including some of those of the reviewer. The criticism falls in two areas: (1) that since utility rates are made for customer classes they fail to reflect the cost of serving some customers, a criticism that is academic, and (2) that no distinction is made between off-peak and on-peak customers, i.e., that the first group is over-charged and the second group under-charged with the effect that much utility capacity is idle during the 24-hour day and capital resources are wasted. This latter criticism gets to the kernel of a most interesting problem and is significant even beyond the writer's field of inquiry.

It is Davidson's thesis that existing utility rates fail to reflect the fixed or capacity charges of operation; that capacity charges should be based on each customer's contribution to the peak load; that off-peak rates should be reduced and on-peak rates increased until possibly 24-hour utilization of the entire plant capacity is achieved. The reviewer is reluctant to accept these contentions on theoretical grounds and unfortunately Dr. Davidson has failed to buttress his arguments with any significant empirical research. There is no consideration of the experience of many utility companies who established, and abandoned, off-peak rates. There is no market analysis or even a hint of the influence of the elasticity of demand on the problem. The reviewer wonders, for example, how many firms would put on a second shift merely to use electricity at half the present price—or how many members of the small fry set would be permitted to sit up past ten o'clock to watch TV merely because electricity is cheaper after that hour. Cost analysis is limited to a few random figures such as $\frac{1}{2}$ a cent a kilowatt hour as the marginal cost of electricity.

Many unanswered questions lie squarely on the threshold of Davidson's thesis. The several strong practical, equitable, and theoretical arguments against the "peak responsibility" method of allocating demand costs upon which his argument depends are far too summarily brushed aside. One can wonder too why the many existing users of electricity with their peaks already established have not built up their off-peak use since in most instances off-peak energy can already be bought at low incremental rates. On the other hand new off-peak customers would certainly have to be charged more than the bare cost of generating electricity.

Professor Davidson clearly indicates that he believes that for much of the total service incremental rates are greater than marginal costs and that a proper

solution would be rate schedules in which a greater portion of the cost of service would be recovered by fixed charges against the customer rather than through energy charges. If we concede the questionable assumption, the solution might appear equitable. From another standpoint, however, the proposal is nothing less than a monopolistic device by which the risks of capital commitment are shifted from the utility to particular consumers. Presents trends in the field of regulation seem to be against proposals similar to Davidson's.

Rather strangely the writer seems to be unaware that he is proposing nothing less than the complete social and productive reorganization of society. If off-peak consumption of electricity is to be developed, economic and social activity must be stimulated during those same hours. Full around the clock, utilization of our utility plant, would undoubtedly mean enormous savings in utility capital as Davidson points out. It would also mean similar savings in the use of all capital as the Soviet planners assume. Apart from the fact that electric (and gas) costs are not significant elements in the cost of production there are many reasons why production cannot be carried on efficiently in this country by second and third shifts. It must also be pointed out that World War II was immeasurably shortened by the use of off-peak reserves of utility capacity that permitted the operation of extra shifts throughout industry. One day's loss of lives constitutes quite a lot of marginal disutility.

Ingenious as might be Professor Davidson's approach to the problem it still falls far short of a theory flexible enough and comprehensible enough to carry him through the briar patch of public utility rate making. Economic theory, even with Davidson's contributions finds no place to adequately handle the necessary assumptions as to joint and common costs, the varying nature of marginal costs, cross elasticities of demand, rate forms, customer classifications, the impact of regulatory limitations of profits, the equity of cost allocations, economic and technological changes over time, and other considerations that make rate making far from a simple procedure. This and the lack of empirical data constitute the basis of the reviewer's critical remarks. These criticisms should not obscure the fact that the author has made an interesting and provocative attack on an important problem. It will undoubtedly be acclaimed by the marginal cost pricing school and others will regard it as an example of how theory can improve on practice. If the reviewer remains skeptical he does not deny that the book is provocative and a foundation for further study in an important area. It is hoped that the author will follow it up.

University of Maryland

E. W. CLEMENS

Monopoly in America. By Walter Adams and Horace M. Gray. New York: Macmillan Co., 1955. Pp. xv, 221, \$2.75.

With crusading fervor and scholarly marshalling of evidence, the authors of this book develop the thesis that "unwise, discriminatory, privilege-creating governmental measures" have contributed materially to the decline of competition in our economic life. They emphasize, similarly, that there is yet time for an aroused public opinion to develop a competitive philosophy on the part

of legislators and government administrators which can halt the march toward monopoly. They deny the validity of the current rationalizations of monopoly as inevitable and disagree with those who hold that such collective goals as order, stability, security, efficiency, productive power and abundance are superior to the goals of individual freedom, equality of opportunity, diffusion of economic power and political democracy. Senator Paul H. Douglas catches the book's spirit in the following excerpt from his introduction to it: "The authors have sounded the tocsin. May the people awake and join those forces which seek to defend and to enlarge the areas of competition and of greater economic democracy."

A variety of statutes and administrative actions have, according to the authors, worked at cross-purposes to our traditional anti-trust policy. These anti-competitive policies and actions have appeared particularly in such areas as the regulation of legalized public utility monopolies, tax concessions or immunities, expenditure policies, especially in connection with procurement for defense, disposal of surplus government property, and provisions in the Atomic Energy Act of 1954 for the development of peacetime uses of atomic energy. In separate chapters on each of these areas, findings are developed from carefully analyzed official sources which give a convincing picture of the role of government in the weakening of competition in the nation's economic structure.

Two weaknesses of the book will impress many readers. The first is that the authors are often guilty, as they themselves suggest in their Preface, of "over-zealousness and extravagance" in stating their case. This shows itself not only in occasional flights from the analyst's desk to the soapbox on the wings of such phrases as "Big Business," "ruthless quest for power," and "monopoly is an abomination in a free society," but also in brushing aside opposing arguments as "spurious" or "unrealistic" and in pushing their own arguments so far that they may rightly be termed "unrealistic" and exaggerated.

More serious is the failure of the authors' proposed remedies to be as convincing as their analysis of the ways in which government has promoted monopoly. There can be no quarrel with their general suggestion that as much competition as we can get should be developed in every segment of our economy nor with the idea that the creation among government administrators of a "pervasive and fundamental competitive philosophy" is essential to getting more competition. While the Surplus Property Board, in deliberately using the postwar disposal of government owned aluminum plants to assign to Reynolds and Kaiser substantial shares in an industry previously monopolized by Alcoa, was obviously imbued by such a philosophy, it is clear from most of the other evidence cited in the book that government administrators generally have favored policies which promote economic concentration. The possibility of a revolutionary shift to a competitive philosophy among these key government administrators does not appear bright.

The most dramatic remedy proposed by the authors is the opening of the publicly owned highways, waterways, and airways and airports to free competition through decontrol of entry and general deregulation of rates and most other

aspects of the transportation industries. The success of the trucking industry in developing under relatively competitive conditions is pointed to by the authors as suggestive of the gains which would result from substituting widespread competition for regulated monopoly in transportation. The authors hurdle lightly over the peculiar economic and technological differences between trucking and other types of regulated industries. So vehement are they in their attack upon the whole system of public utility and transportation regulation as ineffective and inherently doomed to failure, that they suggest that market competition and institutional competition which applies the "yardstick" principle should be substituted for regulation. They suggest further that vigorous application of the anti-trust laws would provide all the government protection, aside from mild police regulations of health and safety, which would be needed to supplement competition. The peculiar economic characteristics which have caused such industries as gas, electricity and communications to become large-scale operations of a monopoly nature are treated too lightly to be convincing.

Certain other devices suggested as means of protecting monopoly in future administration of procurement for defense and disposal of surplus property look much more promising, assuming that administrators become more alert to the need for a positive program to promote competition in these areas.

Whether or not one agrees with all of the reasoning used by the authors in concluding that drastic changes are necessary in government policies if the free economy and a democratic society is to be maintained, this book is a must for all economists, particularly for those who have a special interest in relations between business and government. It contains a mine of authoritative information not generally available, presents thirty-eight pages of sparkling, critical bibliographical notes, challenges many ideas which most of us have been selling to our students for many years, and is much more fun to read than most economics books.

College of William and Mary

CHARLES F. MARSH

The Pricing of Cigarette Tobaccos. By Elmo L. Jackson. Gainesville, Fla.: University of Florida Press, 1955. Pp. xiii, 239. \$4.75.

A sequel to *Price Policies in the Cigarette Industry*, by William H. Nicolls, this book has as its central theme a "description of the price development and the resolution of initial price uncertainty as the sales season begins for each new crop." The author believes that his analysis of the techniques by which leaf prices become established constitutes the most complete set of hypotheses developed to date.

Based upon the complexities of the commodity (and the discussion indicates quite clearly the almost infinite variety of grades with highly subjective attributes) rather than general oligopoly theory, the monograph should be of interest to economists in general, and to students of marketing and price theory, as well as to those in the tobacco industry.

The research reported here is a part of a broader study of tobacco marketing, made possible by the Agricultural Marketing Act of 1946 (RMA Title II)

through provisions of a contract between Vanderbilt University and the United States Department of Agriculture.

The book is concerned with the way in which the few large buyers of cigarette leaf have solved their pricing problem and the impact of this on tobacco auction markets. The first chapter relates this study to those which have been done previously and sets up the problem to be examined. Chapter II discusses grades and demand by grades. The examination of the buying policies of the large buyers occupies Chapters III through VI. Price geography and seasonal movements in prices are studied from the point of view of fewness of buyers in Chapters VII and VIII. General conclusions are contained in the last chapter.

The data are presented in numerous tables which often overshadow the text, but probably are necessary to handle the amount presented. The text is quite readable and highlighted by documented interviews and case references.

It appears from the discussion that it is difficult to come to any supportable conclusion that conspiracy is present in the price actions of the few large buyers. Any attempt to do so is necessarily clouded by the presence of wartime controls and direct price supports by the Federal government and by imperfections of the leaf markets, particularly due to the complexities and inconsistencies of grading.

University of Alabama

DONALD F. MULVIHILL

Minimum Price Fixing in the Bituminous Coal Industry. By Waldo E. Fisher and Charles M. James. Princeton N. J.: Princeton University Press, 1955. Pp. xxxi, 523. \$10.00.

This description, analysis and appraisal of minimum price fixing in the bituminous coal industry is truly a monumental work. Unfortunately, like many other really great but unpopularized monuments it is, because of its careful and detailed treatment of a very technical and highly complex set of problems, not likely to attract the public which it deserves. The blythe enthusiasm of many people for price fixing as a patent remedy for assorted economic ills will probably not be a sufficient stimulant to cause them to give this book the patient perusal which it demands. To make it required reading for price fixers would undoubtedly have much the same effect on their enthusiasm as the sudden introduction to a cold shower has upon the college freshman. One cannot read the book without coming to at least one basic conclusion about price fixing. The patent remedy is by no means as simple and easy to administer as some appear to think.

It is simply not possible to do justice to the contents of the book in the very brief sketch permitted by space limitations. The two opening chapters give the reader, in brief, the background which led to the passage of the Bituminous Coal Act of 1937. The next chapter presents the features of the law itself and the fourth chapter summarizes chronological events in the brief life of the law. The stage having thus been set, the real action carries on through five chapters which develop in careful detail the processes employed in administering the law.

The analysis begins with the geographical classifications used in establishing minimum prices. Here the reader gets his first taste of the complexity attending

the task of price fixing in just one industry. The nearly 7,000 mines in the country were first divided into 22 districts. This proved inadequate, so in 17 of the districts from 2 to 45 subdistricts were found necessary due to important variations within districts. It was further necessary, because of the terms of the Act, to develop freight-origin groups within the districts. These varied from 3 to 65 in the 15 districts utilizing them. On the distribution side of the picture there were delineated 193 common consuming market areas and, as a final classification, 10 minimum price areas were established.

The Act provided: (a) That uncoordinated minimum prices were "to yield a return per net ton" for a given district "equal as nearly as may be to the weighted average of the total cost per net ton" of the minimum price area in which it was located; and (b) That the coordinated prices, the final actual minimum prices, were also to approximate this same weighted average cost. These requirements of the Act placed a statistical chore of compiling cost and sales realization data upon the administrative body which was extremely heavy. It, along with the geographical classifications, may be regarded as preliminary to actual price fixing.

If at this point in the book the reader is still not convinced that minimum price fixing in the bituminous coal industry is a complicated task, he will encounter some rather convincing evidence in the chapters dealing with uncoordinated and then coordinated minimums. First of all, there is the problem of classifying the varieties of soft coal. Upon what basis? Chemical analysis, physical characteristics or uses? Actually no final answer was found and a compromise solution was used. Next comes the sizes question. The 22 districts produce from 10 to 169 sizes each. The district boards after getting some, often varying, answers to these questions then proceeded to determine uncoordinated minimum prices for the coals produced in their respective areas.

The central agency assumed the final task of coordinating the minimum prices submitted by the districts. The whole process necessitated determining some 300,000 minimum prices. Even the authors, in spite of their commendable thoroughness, did not attempt to discuss the techniques of coordination as applied in all districts. Instead they use District 4, Ohio, as an example. It was quite a process. There is no point in trying to give a brief explanation. The analysis requires careful reading to be understood or appreciated. Finally on October 1, 1940, nearly three years after the passage of the law, many hearings and revisions, minimum prices went into effect. Two years later the Act expired!

So coal, long characterized as a sick industry, received a very complicated and elaborate treatment. The curative measures were applied at a time when the patient was showing some signs of self-improvement and were discontinued when healthy profits began to appear. War conditions and other continuing forces have operated to continue profitable operation and hence no real opportunity has been had to see whether or not the patient will have a relapse into the unhealthy condition of the years prior to the thirties.

If one reads the book from the beginning it is true that the repetition of material in the chapter on appraisal is a little annoying. The authors rather wisely

suggest that the reader start with this chapter and then attack the analysis of the earlier chapters. It may also be said that this chapter may be read by itself with considerable profit.

The book is clearly written and contains a wealth of statistical material in the form of tables, charts, maps and figures. Many of these provide reference data on the industry which can be used for more general purposes than the study of price fixing alone. The book certainly belongs in the college library and many economists will want it for their own. In attempting a statement as to the overall value of the book one finds it easy to concur with the comment of Frederick C. Mills in his foreword. "The document they have produced, one may hazard, will occupy a distinctive and enduring place in the literature of political economy."

University of Alabama

BURTON R. MORLEY

Essays in Public Finance and Fiscal Policy. By Gerhard Colm. New York: Oxford University Press, 1955. Pp. xvii, 375. \$4.75.

For the past twenty years Dr. Gerhard Colm has been in the vanguard of contributors to the basic ideas of contemporary fiscal policy. The use of manipulation of tax rates rather than expenditures as a stabilizing device, the importance of securing balanced economic growth as well as full employment, and the development of national economic budgets as an analytical device are all matters that Colm has done much to illumine through his essays of the past two decades that are reprinted in this book.

Since Colm has never bothered to employ a rigorous analytical framework in his writing, some economic theorists may feel impatience with his work. As a policy advisor to the Bureau of the Budget, the President's Council of Economic Advisors, and the National Planning Association, Colm appears to have been more interested in immediate policy matters than the formulation of theory. While the theoretical underpinning of his policy proposals is often scant, the policy proposals are enriched by a far greater concern for political and administrative matters than is shown by most theorists when they write at the policy level. Colm's spirited essay in defense of the corporate income tax, for example, has probably moved few economic theorists, but his arguments for this tax on institutional grounds are ones that the policy maker certainly must consider.

It is surprising how well these eighteen essays written over two decades join together in forming a unified whole and at the same time furnish a history of the development of this unified way of viewing fiscal problems. Also surprising is how well those particular essays which were written in regard to the immediate matters of recovery from depression, war finance, and the post-war aftermath still read in the present light of historical perspective.

Of more current interest are Colm's two essays on the construction and use of national economic budgets. These two essays, which were initially published abroad, should be read in the reviewer's opinion in conjunction with Colm's more recent journal article on "Economic Barometers and Economic Models"¹

¹ *Review of Economics and Statistics*, February 1955, XXXVII, pp. 55-62.

as an excellent discussion of this topic. While one may doubt the forecasting value of conjectural national economic budgets, the national economic budget still remains a valuable educational device that the public and the politician can be taught. By forcing people to look at the total economic picture and to recognize the inconsistencies their proposals may generate in relation to the rest of the economic picture as presented by the national budget much may be done to force greater rationality into public discussions of economic policies.

Texas Agricultural and Mechanical College

A. MORGNER

Policies to Combat Depression: A Conference of the Universities-National Bureau Committee for Economic Research. Princeton, N. J.: Princeton University Press, 1956. Pp. x, 417. \$8.50.

The papers which comprise *Policies to Combat Depression* were originally presented at conferences held in October 1953 and May 1954. The names of the principal authors—Gordon, Caplan, Boulding, Lusher, Pechman, Goode, Heer, Ida Merriam, Roosa, Grebler, Owen, Fox, Gale Johnson, and Triffin—indicate the quality of the essays. Many other authorities contributed comments. The book will be widely read and used by other specialists, teachers, and students, besides Arthur F. Burns. Nearly half the book deals with built-in flexibility, particularly its measurement; in addition, there are papers on types of depressions, the 1948-49 recession, state and local finance, housing, self-liquidating public works, and international problems. The otherwise impossible task of a reviewer allotted 500 words for such a diverse collection is made feasible by the fact that this book comes equipped with a built-in review, an excellent one by Herbert Stein.

The most interesting result is Lusher's ambitious attempt to measure the total amount of built-in flexibility. He calculated that in a hypothetical recession occurring under conditions approximating 1953, more than one-third of an assumed decline in GNP would have been offset by built-in flexibility, compared to less than 5 per cent in the actual downswing of 1937-38. In 1929-32, built-in flexibility could scarcely be said to exist, according to Lusher's figures; in two of the three years, the perverse behavior of state and local governments substantially exceeded the positive contribution on the federal side. Of course, these results are subject to numerous qualifications and reservations.

This gives us some quantitative idea of the increase in built-in flexibility since 1929, but it does not come to grips with the really important question. We know that the downswing resulting from a given set of depressive forces would proceed more slowly today than it would have a quarter-century ago, but we don't know whether it would be reversed any sooner. We don't even know whether the total amplitude of the downswing would be any less. The problem is, what change has the advent of built-in flexibility made on the dynamic process of the business cycle downswing? Unfortunately, dynamic models are not yet far enough developed to give us an answer we could trust.

The present international situation, both political and economic, is such that unemployment amounting to eight to ten million would be a disaster.

Automatic stabilizers provide a breathing space during which discretionary action can be taken, but the very fact that they slow the downswing in its initial stages may encourage the belief that the downswing will reverse itself—and the past decade of prosperity favors election of the let-business-alone kind of politician. A dangerous combination of saturated markets for housing and automobiles together with overoptimism by businessmen, politicians, and economists could develop soon. *Policies to Combat Depression* does not give assurance that disaster will never strike again.

Vanderbilt University

RENDIGS FELS

Measuring Business Changes: A Handbook of Significant Business Indicators.

By Richard M. Snyder. New York: John Wiley & Sons, 1955. Pp. xvii, 382. \$7.95.

In recent years there has been a growing awareness of the value of various national indexes or indicators as a means of determining the rate and direction of change in various phases of our economy. This increase in the use of indexes is attributable partly to the Council of Economic Advisors and partly to improvement in the quality and promptness of the indexes.

Measuring Business Changes by Richard M. Snyder describes and explains over 50 national business indicators or indexes. The author has prepared the book for the businessman. It is valuable to a person who is unacquainted with indexes, what they purport to measure, their limitations, and their sources, and it is also valuable to those who work with indexes, as it brings together in one place a great deal of pertinent data regarding these indexes.

Indexes are grouped under nine heads: national income and product, population, labor, commodity prices, production and business activity, construction activity and costs, trade, financial activity, and stock prices.

The pattern of treatment used for each index in these sections is first to give a description of the index. In this part, rather detailed information is given regarding any subindexes, revisions, work in prospect, the most likely uses, and limitations and qualifications. Sources of current data are given, followed by sources of historical data. Under composition the concepts back of the index are presented along with the most important "adjustments" made by the compilers, the mathematical formulas and weights used in computing the index. For the nontechnical reader the mathematical treatment is too hard to follow and is probably incomplete for the technical work, but it does serve to show the particular method of weighting and averaging. The nontechnical reader can easily omit this part without any serious loss.

The selection of the indexes to be included is good. Obviously there are hundreds more, and anyone interested in a particular field will want others, but for a general over-all picture those chosen should be adequate. No attempt was made to give any regional indexes, and the problem is not mentioned.

The treatment of the material is good; the data are well organized and well presented. The writing is clear, in general, although occasionally difficult to follow. The greatest difficulty with any treatment of indexes is that the indexes

are constantly being revised, and consequently information about them gets out of date. The book should fill a need of those who use indexes.

Louisiana State University

P. F. BOYER

Flow of Funds in the United States, 1939-1953. Washington, D. C.: Board of Governors of the Federal Reserve System, 1955. Pp. xxii, 390. Paper, \$2.75.

Much thought, work, and effort has gone in recent years into developing systems of national accounts as tools of economic analysis. Of the two systems that have been developed, one, the Department of Commerce's national income and expenditure accounts, has become a standard, and much used tool in the economist's kit, and has contributed substantially to enlarging our understanding of production and distribution processes. The other, Professor Leontieff's system for measuring input-output relations among major industrial groups, though it exists as a well developed conceptual framework, has not yet been employed in analysis on the same broad and contributing scale.

Now the Board of Governors of the Federal Reserve System, with the publication of *Flow of Funds in the United States, 1939-1953*, sets forth a third system of national economic accounting, which the Board's staff has been developing since 1948, building on pioneer exploratory work done by Professor Morris Copeland. The objective of this new system is to provide a comprehensive and systematic economic record that will facilitate study of the interrelations among financial and nonfinancial processes. In working toward this objective, the Board's staff has performed a significant and difficult research job. They have developed a new and elaborate conceptual framework of national accounts and have fleshed it out with data, on an annual basis, back to 1939. Now that the system is established, the Board plans to carry it forward on at least an annual basis, and hopes to develop a more current—possibly quarterly—basis of reporting in the future.

The new, flow-of-funds system of accounts encompasses all transactions in the economy that (1) involve at least two separate economic units; and (2) are effected by a transfer of credit and/or money. Thus the system's boundaries extend beyond the measurements of national output alone, since flows of funds arise from transfers of existing assets and shifts in portfolio composition as well as from purchases and sales of current production.

In the flow-of-funds system, all funds flows are organized into detailed statements of sources and uses of funds for each of ten major groups or sectors into which the economy is divided. These are: consumers, corporate business, non-farm noncorporate business, farm business, Federal government, State and local governments, banking systems, insurance, other institutional investors, and rest of the world. These sector accounts serve as a set of interlocking balance-of-payments statements, recording each sector's purchases and sales of commodities and services, its credit and capital outflows and inflows, and the changes in its monetary balances. Further, within the sector accounts, transactions are classified into twelve non-financial and nine financial categories, to provide users of the accounts with the detail necessary to make alternative combinations

of data that will serve alternative formulations of income, consumption, saving, and investment concepts.

Data from the flow-of-funds accounting system are expected to provide the bases for many different investigations of the functioning of the economy. For example, they make it possible to observe changing patterns in credit and capital market utilization as fluctuations in production and consumption occur. The accounts are designed to facilitate inquiries into how financial factors influence, and are influenced by, other economic developments; and the flow-of-funds record for the period 1939-1953 has already proved helpful to the Federal Reserve research staff in some inquiries of this type—in tracing and evaluating changes in the structure of private debt since the end of the war, for example. As the record goes forward and the frequency of recording increases, data provided by the accounts should become increasingly useful in evaluating cyclical and trend relationships among spending, saving, and financing.

Credit and monetary developments necessarily play a strategic role in a highly interdependent economy such as ours. The development of means and methods of evaluating the impact and consequences of such developments on other areas of the economy is a proper concern of the central bank, and *Flow of Funds in the United States, 1939-1953* is evidence that the Federal Reserve authorities are not slighting their responsibilities in this regard. It is evidence, too, both of the continuing high quality of basic economic research carried on in the Federal Reserve System and of the willingness of the System authorities to share the significant findings of their research staff with economists and the public generally.

The new flow-of-funds accounting system represents an important addition to the means whereby our knowledge of the way our economy operates may be increased.

University of North Carolina

CLIFTON H. KREPS, JR.

The Railroads of the South, 1865-1900. By John F. Stover. Chapel Hill N. C.: University of North Carolina Press, 1955. Pp. 310. \$5.00.

The purpose of this little volume is succinctly stated in its Introduction as being "to trace the development of a growing northern financial influence over southern railroads in the generation following the Civil War." Its findings are as summarily set forth in the same paragraph as follows: "Prior to and during the war years southerners, using chiefly local finances, owned, controlled, and managed the great bulk of southern railroads. A generation later, in 1900, northern men and money exerted a considerable financial influence and control over a much enlarged southern railway network."

This is a competent piece of historical scholarship. Much intensive research went into its preparation; a wide variety of source materials was canvassed; and the actual writing was done with a patient regard for fact that does credit to its author. Above all, perhaps, it thoroughly documents the evolution which is its primary concern. With all of this, however, it is prevented from being a particularly significant contribution to the literature by the fact that it does

little more than present detailed information explaining a development already quite fully understood.

University of Georgia

HOWARD R. SMITH

Raising Capital with Convertible Securities. By C. James Pilcher. Ann Arbor, Mich.: Bureau of Business Research, School of Business Administration, University of Michigan. Pp. viii, 153. \$2.50.

Space requirements of standard treatises on corporation finance prevent complete discussion of the special features of convertible bonds and convertible preferred stocks. In this book on convertible securities, Dr. Pilcher presents a comprehensive treatment of all aspects of financing by means of this relatively little used source of funds. Dr. Pilcher's handling of the use of convertibles is illustrative, illuminating and authoritative. It reviews the changing fashions in the utilization of this method of financing, the advantages and disadvantages of convertibles from the issuers viewpoint, and the attractiveness of this class of securities to institutional and other investors. In summary, Dr. Pilcher presents an acute analysis of the role of convertible securities as a financing medium. This brief book, developed from the author's doctoral dissertation on the same subject, should find its place as required reading for students of corporation finance.

University of North Carolina

JOHN T. O'NEIL

NOTES

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ANNOUNCEMENT

The twenty-sixth annual conference of the Southern Economic Association will be held on November 16 and 17, 1956, at the Sir Walter Hotel, Raleigh, North Carolina.

President Edward H. Anderson has appointed the Nominating Committee for the 1957 officers of the Southern Economic Association. It consists of William H. Nicholls, Vanderbilt University, Chairman; John B. McFerrin, University

of Florida; and William H. Baughn, Louisiana State University. Members are invited to suggest names to this committee.

HOWARD R. SMITH
Secretary

PERSONNEL NOTES

Pauline Anderson is head of the Department of Business Administration at Freed-Hardeman College.

T. Coleman Andrews, chairman of the Board and executive officer of American Fidelity and Casualty Company, has been appointed visiting lecturer at the Graduate School of Business Administration, University of Virginia.

Joe C. Ashby has been promoted to associate professor of economics at Lamar State College of Technology.

George Hubert Aull, head, Department of Agricultural Economics, Clemson College, served as chairman of a South Carolina Fiscal Survey Committee appointed to project state revenues over the next five years.

Eric Axilrod has joined the staff of the University of Tampa to teach economics and finance.

Russell H. Baugh has been appointed head of the Economics Department at Oklahoma A. and M. College.

Paul A. Brinker has been appointed chairman of the Economics Department at the University of Oklahoma.

Dale Buckleg is teaching business administration at Freed-Hardeman College.

James A. Byrd, of the University of Texas, has been awarded a pre-doctoral fellowship in business administration by the Ford Foundation for the year 1956-57.

Dudley D. Carroll, Keenan professor of economics and dean emeritus of the School of Business Administration at the University of North Carolina, will retire at the end of the current academic year.

Jere W. Clark, formerly of West Virginia University, has joined the University of Chattanooga as assistant professor of economics and commerce.

Sherrill Cleland, professor in the School of Business Administration, University of Richmond, edited the White Paper of the State Chamber of Commerce during the recent session of the Virginia State Legislature.

J. Herschel Coffee, professor of economics at West Texas State College, was granted a leave of absence for the second semester of the 1955-56 academic year to complete work on his doctorate at the University of Texas.

Robert T. Collins was promoted to associate professor of economics at Alabama Polytechnic Institute in September, 1955.

Robert L. Conrod has been appointed professor of economics at Lambuth College.

Eleanor Craig has resigned her instructorship in economics at the Woman's College of the University of North Carolina to accept an appointment on the research staff of the Federal Reserve Bank of Richmond.

Jay A. Craven has been promoted to associate professor of business statistics at the University of Miami.

George W. Cubberly has been promoted to assistant professor of marketing at the University of Miami.

William H. Culp, teaching fellow in accounting at the University of Michigan, has been appointed assistant professor of business administration at Davidson College, effective September 1956.

Alfred G. Dale, of the University of Texas, has been awarded a pre-doctoral fellowship in business administration by the Ford Foundation for the year 1956-57.

David P. Delorme has accepted an appointment as associate professor of economics at Oklahoma City University.

Kathleen E. Dunlop, formerly at Carthage College (Illinois), has been appointed assistant professor of economics at Hollins College.

John Dyer has been promoted to associate professor of marketing at the University of Miami.

John E. Dykstra, professor of industrial management at the University of North Carolina, will return to his position following a year's leave of absence as holder of the Scott Paper Company's faculty fellowship.

Richard Ericson, formerly head of the Department of Economics at Stetson University, has accepted an appointment to the faculty at the State University of Iowa.

Charles E. Ferguson, graduate student in economics at the University of North Carolina, has been awarded a Ford Foundation doctoral dissertation fellowship for 1956-57.

William C. Flewellen, Jr., has been appointed assistant dean of the School of Commerce and Business Administration at the University of Alabama.

John N. Fry has been appointed instructor in economics at the University of Texas.

S. Paul Garner has been made dean of the School of Commerce and Business Administration at the University of Alabama.

Roy Geeting has retired from the University of Tampa but does some teaching at Jacksonville Junior College.

Franklee Gilbert, graduate student and part-time instructor in economics at the University of North Carolina, has been awarded an H. B. Earhart fellowship for the year 1956-57.

Wendell C. Gordon, associate professor of economics, University of Texas, has been awarded a grant from the University of Texas for research on economic development in Colombia.

Ralph T. Green, professor and chairman of the Department of Economics at Baylor University, was granted an indefinite leave last March to become director of the Texas Commission on Higher Education.

John M. Gunn, Jr., was appointed assistant professor of economics at Florida State University, effective February 1, 1956.

Vivian Henderson, head of the Economics Department at Fisk University, was the principal consultant for the Florida A. and M. University Work Conference in Economic Education in November, 1955.

Donald R. Johnson has joined the staff of the University of Miami as assistant professor of finance.

Robert M. Kane has been promoted to assistant professor of management at the University of Miami.

Albert S. Keister is retiring on August 31, 1956, as professor and head of the Department of Economics at the Woman's College of the University of North Carolina, after 32 years of service.

John W. Kennedy has been promoted to professor of economics and business administration at Alabama Polytechnic Institute.

T. W. Knote, head of the Department of Business Administration at Virginia Polytechnic Institute, retired on December 31, 1955.

Irving Lessor has joined the staff of the University of Miami as an instructor in the Department of Business Education.

H. H. Liebhafsky, formerly of the University of Michigan, has been appointed assistant professor of economics at the University of Texas.

Rayford J. McLaurin, formerly of the University of Alabama, has joined the University of Chattanooga as assistant professor of economics and commerce.

Frank Meehan has been promoted to assistant professor of marketing at the University of Miami.

Frederic Meyers, associate professor of economics, University of Texas, is to be on research leave during the first semester of 1956-57, and will teach at the University of Wales during the second semester. Through the year he plans to carry on research on labor organizations in the coal mines of Belgium, France, Germany, and England.

B. O. Miller, professor of economics, served as acting head of the Department of Business Administration, Virginia Polytechnic Institute, during the second half of the 1955-56 academic year.

F. Byers Miller, dean of the University of Richmond School of Business Administration, was on leave of absence during the second semester of 1955-56.

William L. Miller was promoted to professor of economics and business administration at Alabama Polytechnic Institute beginning with the fall quarter, 1955.

H. H. Mitchell was promoted to associate professor of economics and business administration at Alabama Polytechnic Institute in September, 1955.

Henry Moore, head of the Bureau of Business Research at the University of Alabama, has been elected president of the Associated University Bureaus of Business and Economic Research.

Burton R. Morley, head of the Department of Management at the University of Alabama, served as coordinator of commerce graduate work at the Redstone Arsenal, Huntsville, Alabama, for the spring term, 1955-56.

John H. Mudie, who has been an instructor in economics at Texas A. and M. College, has joined the Economic Research Department, Government Bank for Puerto Rico at San Juan.

Edward A. Nelson, formerly of the University of Missouri, has accepted a position as assistant professor of economics at Baylor University.

A. E. Nielson has joined the staff of the University of Tampa to teach economics and finance.

A. S. Parks of Florida A. and M. University presented a paper at the Conference for Field Personnel sponsored by the Joint Council on Economic Education held in Battle Creek, Michigan, in October, 1955.

A. J. Penz has been appointed head of the Department of Accounting at the University of Alabama.

John E. Perkins, formerly of the University of Texas, is now a member of the Department of Social Sciences at Northwest Missouri State College.

Harvey Poe has joined the staff of the University of Miami as instructor in business law.

Nell Reid has been appointed temporary instructor in statistics at the University of Alabama.

William D. Ross, professor of economics and director of the Louisiana Highway Finance Study, was appointed dean of the College of Commerce at Louisiana State University, July 1.

Joel W. Sailors, formerly of the University of Texas, has been appointed assistant professor of economics at the University of Houston.

Gary Salzman has been promoted to associate professor of business law at the University of Miami.

Roy J. Sampson is now a member of the Department of Economics at Texas Technological College.

Morris A. Savitt has been promoted to assistant professor of management at the University of Miami.

Everett W. Schadt served as part-time lecturer in economics in the area of transportation at the University of North Carolina during the spring semester of 1956.

Martin Schnitzer, formerly of the University of Florida, was appointed instructor of economics, College of Business Administration, University of Arkansas, beginning February, 1956.

C. H. Sheffey is professor of economics and business administration at Hiwassee College.

John B. Slocum has been promoted to associate professor of management at the University of Miami.

W. Allen Spivey, graduate student in economics at the University of North Carolina, has been awarded a National Science Foundation post-doctoral fellowship for 1956-57.

John S. Spratt, associate professor of economics at Southern Methodist University, was recently named as the winner of the Carr P. Collins award of \$1,000 for the best Texas book of 1955. The prize-winning publication was *The Road to Spindletop: Economic Change in Texas, 1875-1901*.

Thomas M. Stanback, Jr., will return to his position as assistant professor of economics at the University of North Carolina after a year's leave of absence with the National Bureau of Economic Research.

Louis H. Stern, of the University of California at Los Angeles, has been named acting assistant professor of economics at Texas A. and M. College.

Eugene L. Swearingen has been promoted to associate professor of economics at Oklahoma A. and M. College.

Herman P. Thomas, professor of economics, served as acting dean of the University of Richmond School of Business Administration during the second semester of 1955-56.

Wendell Thomas has joined the marketing research staff at Clemson College as assistant agricultural economist in February.

Charles C. Thompson has been appointed assistant professor of economics and commerce at the University of Chattanooga.

James B. Trant, who has served as dean of the College of Commerce and professor of banking at Louisiana State University since 1928, retired in June.

Harry Wade is visiting professor of accounting at the University of Miami, effective February 1, 1956. He has resigned as chairman of the Department of Accounting at the University of Iowa.

William Way, Jr., professor and head of the Department of Transportation and Public Utilities, University of Tennessee, died April 5, 1956.

Barton A. Westerlund has been promoted to associate professor of marketing at the University of Miami.

Lamar White, formerly with the Department of State, has accepted an appointment as economist in the Industrial Economics Department of the Southwest Research Institute at San Antonio, Texas.

J. Walker Whittle is teaching economics at Freed-Hardeman College.

Charles Wurst has been promoted to associate professor of marketing at the University of Miami.

Nathaniel A. Wynn, Jr., joined the farm management research staff at Clemson College as assistant agricultural economist in February.

Manuel Zaiac has been promoted to assistant professor of accounting at the University of Miami.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

William Brewster, Jr., Texas Western College, El Paso, Tex.

William Noyce Burt, Alabama Polytechnic Institute, Auburn, Ala.

E. G. Cleverdon, Merchants National Bank, Mobile, Ala.

C. D. Clark, North Carolina State College, Raleigh, N. C.

Joe Harold Cox, University of Houston, Houston 21, Tex.

Charles E. Edwards, University of North Carolina, Chapel Hill, N. C.

David M. Faulkner, University of North Carolina, Chapel Hill, N. C.

Joseph L. Frye, University of Tennessee, Knoxville, Tenn.

Mason Gaffney, North Carolina State College, Raleigh, N. C.

John W. Hamilton, University of Tennessee, Martin, Tenn.

Edgar Powell Hickman, University of North Carolina, Chapel Hill, N. C.

R. J. M. Hobbs, University of North Carolina, Chapel Hill, N. C.

Giles A. Hubert, Dillard University, New Orleans, La.

Alonzia A. Johnson, 1932 Carver Avenue, Memphis, Tenn.

Earvin L. Joyner, Room 664, 50 Seventh Street, N. E., Atlanta 23, Ga.
Marlin V. Law, Georgia Institute of Technology, Decatur, Ga.
Phillip D. McCoury, University of Tennessee, Knoxville, Tenn.
Clarence C. Morrison, University of North Carolina, Chapel Hill, N. C.
Rodney D. Parrott, University of Houston, Houston, Tex.
Gerardo Portela Portela, Havana University, Havana, Cuba.
Royal H. Ray, Florida State University, Tallahassee, Fla.
Carl E. Wade, West Virginia University, Morgantown, W. Va.
Jack H. Wilcox, University of Tennessee, Knoxville, Tenn.

BOOKS RECEIVED

- Abel-Smith, Brian, and Titmuss, Richard M. *The Cost of the National Health Service in England and Wales*. New York: Cambridge University Press, 1956. Pp. xx, 176. \$5.50.
- Alyea, Paul E. and Blanche R. *Fairhope, 1894-1954: The Story of a Single Tax Colony*. University, Ala.: University of Alabama Press, 1956. Pp. xii, 351. \$4.50.
- Beal, George Max, and Bakken, Henry H. *Fluid Milk Marketing*. Madison, Wis.: Mimir Publishers, 1956. Pp. xii, 556. \$7.50.
- Bergh, Louis O., and Conyngton, Thomas. *Business Law*. 5th ed. New York: Ronald Press Co., 1956. Pp. x, 1005. \$7.00.
- Blumenthal, W. Michael. *Disability Retirement in Industrial Pension Plans*. Princeton, N. J.: Industrial Relations Section, Princeton University, 1956. Pp. 62. Paper, \$2.00.
- Bok, Derek Curtis. *The First Three Years of the Schuman Plan*. Princeton, N. J.: International Finance Section, Princeton University, 1955. Pp. 79. Paper, 25¢.
- Christie, Robert A. *Empire in Wood: A History of the Carpenters' Union*. Ithaca, N. Y.: New York State School of Industrial and Labor Relations, Cornell University, 1956. Pp. xvii, 356. \$5.50.
- Cochrane, Willard W., and Bell, Carolyn Shaw. *The Economics of Consumption: Economics of Decision Making in the Household*. New York: McGraw-Hill Book Co., 1956. Pp. viii, 481. \$6.50.
- Davies, Margaret Gay. *The Enforcement of English Apprenticeship: A Study in Applied Mercantilism, 1563-1642*. Cambridge, Mass.: Harvard University Press, 1956. Pp. x, 319. \$6.00.
- Derber, Milton. *Labor-Management Relations at the Plant Level Under Industry-Wide Bargaining*. Champaign, Ill.: Institute of Labor and Industrial Relations, University of Illinois, 1956. Pp. 130. \$2.50.
- Dobb, Maurice. *On Economic Theory and Socialism: Collected Papers*. New York: International Publishers, 1955. Pp. viii, 293. \$4.00.
- Drummond, William F., S.J. *Social Justice*. Milwaukee, Wis.: Bruce Publishing Co., 1955. Pp. x, 132. \$2.00.
- Due, John F. *Intermediate Economic Analysis*. 3rd ed. Homewood, Ill.: Richard D. Irwin, 1956. Pp. xvi, 588. \$6.00.
- Fellner, William. *Trends and Cycles in Economic Activity: An Introduction to Problems of Economic Growth*. New York: Henry Holt and Co., 1956. Pp. xiv, 411. \$5.00.
- Fossati, Eraldo. *Essays in Dynamics and Econometrics*. Chapel Hill, N. C.: Department of economics, University of North Carolina, 1955. Pp. 36.
- Gilman, Glenn. *Human Relations in the Industrial Southeast: A Study of the Textile Industry*. Chapel Hill, N. C.: University of North Carolina Press, 1956. Pp. xii, 327. \$5.00.
- Gregory, Sir Theodore. *The Present Position of Central Banks*. New York: John de Graff, 1956. Pp. 25. Paper, 50¢.

- Grampp, William D. and Weiler, Emanuel T. (eds.). *Economic Policy: Readings in Political Economy*. Rev. ed. Homewood, Ill.: Richard D. Irwin, 1956. Pp. xiii, 427. \$3.95.
- Hamberg, D. *Economic Growth and Instability: A Study in the Problem of Capital Accumulation, Employment, and the Business Cycle*. New York: W. W. Norton & Co., 1956. Pp. xii, 340. \$4.00.
- Harriss, C. Lowell. *The American Economy: Principles, Practices, and Policies*. Rev. ed. Homewood, Ill.: Richard D. Irwin, 1956. Pp. xv, 816. \$6.00.
- Hess, Arleigh, P., Jr. and others (eds.). *Outside Readings in Economics*. 2nd ed. New York: Thomas Y. Crowell Co., 1956. Pp. ix, 502. \$1.95.
- Hohman, Elmo Paul. *History of American Merchant Seamen*. Hamden, Conn.: Shoe String Press, 1956. Pp. viii, 125. \$3.50.
- Horowitz, Hartin and Benjamin, Hazel C. *A Trade Union Library, 1955*. 6th ed. Princeton, N. J.: Industrial Relations Section, Princeton University, 1955. Pp. vi, 58. Paper, \$1.50.
- Industrial Relations Center. *Organization for Management Teamwork: Proceedings of a Conference Held April 5-6, 1955 with the Cooperation of the Twin Cities Chapter of the Society for Advancement of Management through the Center for Continuation Study, University of Minnesota*. Dubuque, Iowa: Wm. C. Brown Co., 1955. Pp. xiv, 64. Paper, \$2.00.
- Jones, Frederick W. and Kaplan, Bess (eds.). *The Economic Almanac, 1956*. New York: Thomas Y. Crowell Co., 1956. Pp. xii, 688. \$2.95.
- Kindleberger, Charles P. *The Terms of Trade: A European Case Study*. London: Chapman & Hall, 1956. Pp. xx, 382. \$9.00.
- Kuznets, Simon (ed.). *Income and Wealth*. London: Bowes & Bowes, 1956. Pp. xiv, 242. 42s.
- Mackenzie, Donald H. *The Fundamentals of Accounting: A Cost and Revenue Approach*. Rev. ed. New York: Macmillan Co., 1956. Pp. xv, 742. \$6.00.
- McMurry, Donald L. *The Great Burlington Strike of 1888: A Case History in Labor Relations*. Cambridge, Mass.: Harvard University Press, 1956. Pp. x, 377. \$6.00.
- Merritt, Roy. *Crime Wave Reduced to a Ripple*. New York: Pageant Press, 1956. Pp. 168. \$3.00.
- Mills, C. Wright. *The Power Elite*. New York: Oxford University Press, 1956. Pp. 423. \$6.00.
- Morton, J. E. *Urban Mortgage Lending: Comparative Markets and Experience*. Princeton, N. J.: Princeton University Press, 1956. Pp. xx, 187. \$4.00.
- Mueller, Stephen J. *Labor Law and Legislation*. 2nd ed. Cincinnati, Ohio: South-western Publishing Co., 1956. Pp. xiv, 863. \$6.00.
- Osterbind, Carter C. and Jones, Elise C. *Florida's Commercial Fisheries: Markets, Operations, Outlook*. Gainesville, Fla.: Bureau of Economic and Business Research, University of Florida, 1955. Pp. xiv, 160. Paper, \$3.00.
- Parnes, Herbert S. *Union Strike Votes: Current Practice and Proposed Controls*. Princeton, N. J.: Industrial Relations Section, Princeton University, 1956. Pp. 141. Paper, \$3.00.

- Robertson, Ross M. *History of the American Economy*. New York: Harcourt, Bruce and Co., 1955. Pp. xiv, 593. \$5.75.
- Ross, William D. and Melton, Lee J. *Financing Highway Improvements in Louisiana: A Financial Analysis for the Louisiana Legislative Council*. Baton Rouge, La.: Division of Research, College of Commerce, Louisiana State University, 1955. Pp. 236.
- Rotwein, Eugene (ed.). *David Hume: Writings on Economics*. Madison, Wis.: University of Wisconsin Press, 1955. Pp. cxi, 224. \$4.50.
- Seltzer, Lawrence H. *Interest as a Source of Personal Income and Tax Revenue*. New York: National Bureau of Economic Research, 1955. Pp. 1248-1330. Paper, \$1.25.
- Shaterian, William S. *Export-Import Banking: The Documents and Financial Operations of Foreign Trade*. 2nd ed. New York: Ronald Press Co., 1956. Pp. x, 508. \$6.50.
- Ulman, Lloyd. *The Rise of the National Trade Union: The Development and Significance of Its Structure, Governing Institutions, and Economic Policies*. Cambridge, Mass.: Harvard University Press, 1955. Pp. xix, 639. \$9.50.
- United Nations. *Statistical Yearbook, 1955*. New York: Columbia University Press, 1955. Pp. 644. Paper, \$6.00.
- United Nations. *Yearbook of International Trade Statistics, 1954*. New York: Columbia University Press, 1955. Pp. 556. Paper, \$5.00.
- Unterberger, S. Herbert. *Guaranteed Wage and Supplementary Unemployment Pay Plans*. Chicago, Ill.: Commerce Clearing House, 1956. Pp. ix, 189. Paper, \$3.50.
- Vaughan, Floyd L. *The United States Patent System: Legal and Economic Conflicts in American Patent History*. Norman, Okla.: University of Oklahoma Press, 1956. Pp. xvi, 355. \$8.50.
- Villari, Luigi. *Italian Foreign Policy under Mussolini*. New York: Devin-Adair Co., 1956. Pp. xii, 396.
- Wendt, Paul F. *Real Estate Appraisal: A Critical Analysis of Theory and Practice*. New York: Henry Holt & Co., 1956. Pp. x, 320. \$4.50.
- Wendt, Paul F. *The Role of the Federal Government in Housing*. Washington, D. C.: American Enterprise Association, 1956. Pp. v, 48. Paper, \$1.00.
- Wu, Yuan-Li. *An Economic Survey of Communist China*. New York: Bookman Associates, 1956. Pp. x, 566. \$12.50.
- Youtsler, James S. *Labor's Wage Policies in the Twentieth Century*. New York: Twayne Publishers, 1956. Pp. 344. \$5.00.

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